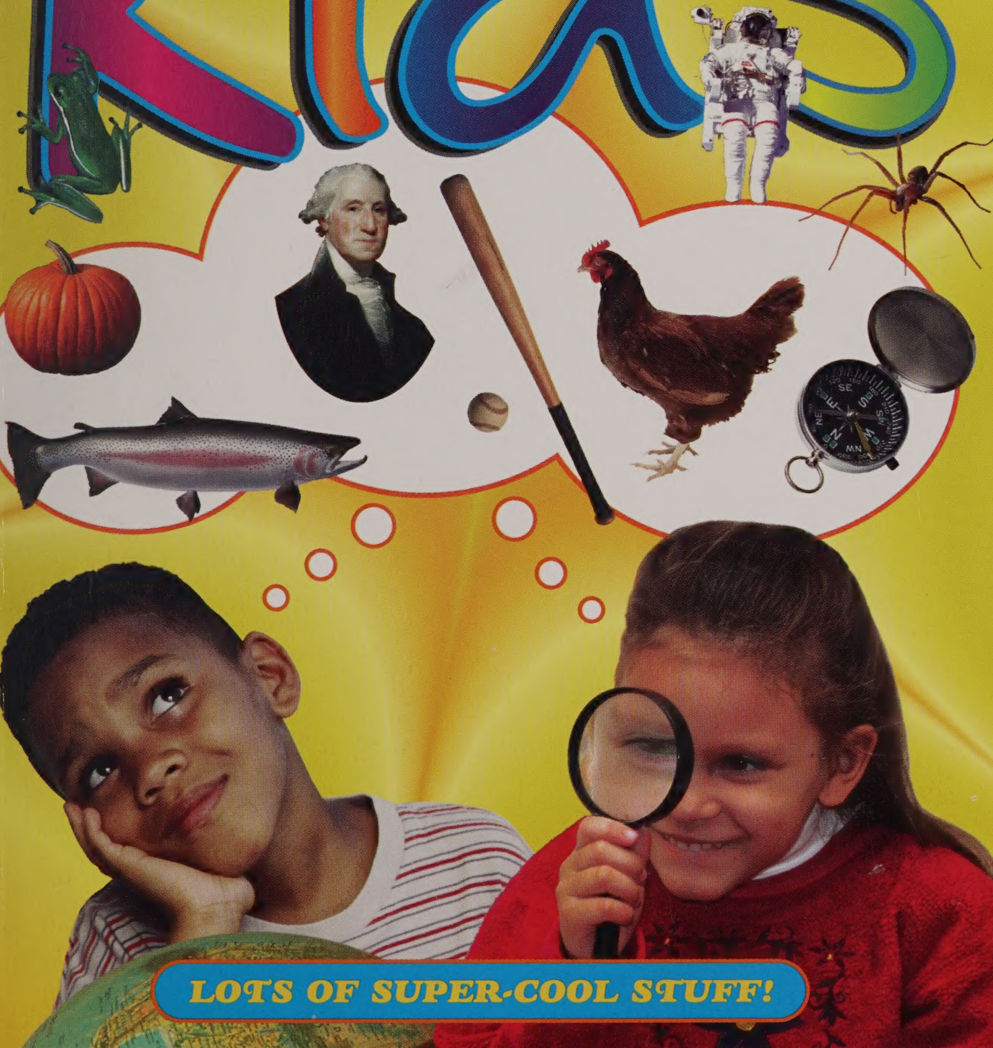
WACKY FACTS AND FUN ACTIVITIES!

The Old Farmer's ALMANAC for Kids



LOTS OF SUPER-COOL STUFF!

The Old Farmer's Almanac for Kids

Yankee
PUBLISHING

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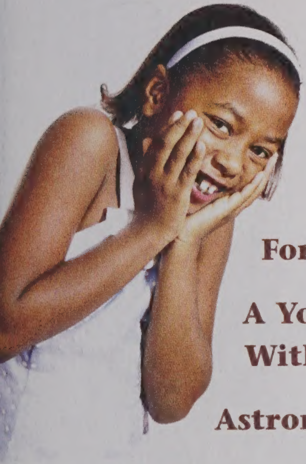


Contents

Foreword 5

A Young Farmer With a Big Idea 6

Astronomy 9

Weather 23

On the Farm 47

Gardening 61

History 77

Nature and Outdoors 91

Pets 109

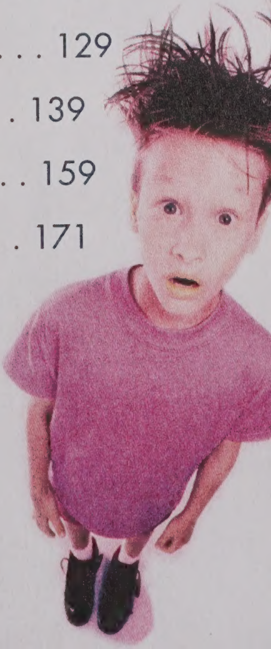
Sports 129

Health 139

Funnies and Facts 159

Useful Things 171

Index 189



Foreword

Dear Kids (and Everybody Else!),

What's "new"?

Well . . . there's the new Moon . . . the New Year . . . New Hampshire, New Jersey, New Mexico, and New York . . . Newfoundland and New Brunswick . . . new MP3 players . . . newts and Fig Newtons (do they count?) . . . and (drum roll, please) . . .

. . . the first-ever full-size edition of *The Old Farmer's Almanac for Kids!*

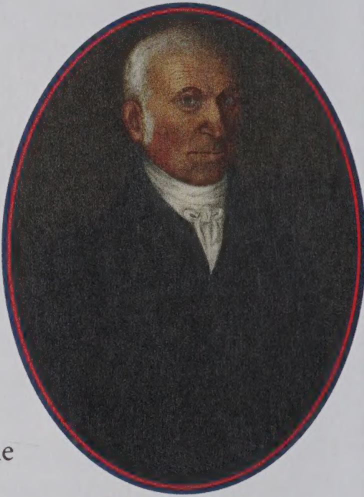
A few years ago, we published a 32-page *Almanac Just for Kids* and asked you to write and tell us what you liked about it. To our surprise and delight, hundreds of you responded! We took all of your suggestions and ideas (plus a few of our own) and fit as many as we could into the book you are holding in your hands. But because there aren't enough pages here for everything, we created a new Web site, Almanac4kids.com. There, you'll find daily facts and special features, plus a free Activity Guide with ideas for ways that you (and your parents and teachers, too) can have more fun.

We hope that you enjoy this Almanac—but please don't keep us in suspense! We want to hear your news, views . . . and even boos! E-mail us through the link at Almanac4kids.com/tellus or send a letter to *The Old Farmer's Almanac for Kids,* P.O. Box 520, Dublin, NH 03444.

Thanks—and have fun!

Once upon a time, a boy in Massachusetts daydreamed about making an almanac. Today, he's famous for it.

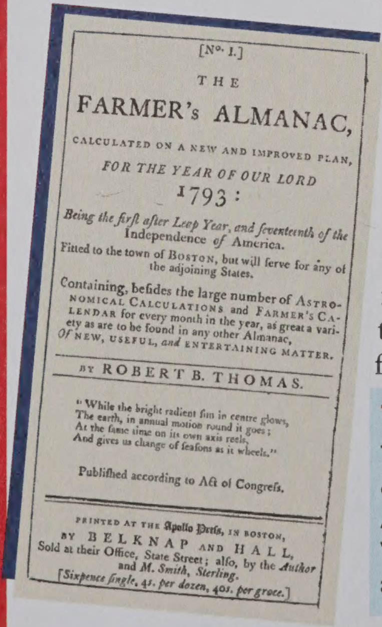
A Young Farmer



Robert Bailey Thomas was born in Grafton, Massachusetts, on April 24, 1766. He and his younger brother, Aaron, lived with their parents on a farm, where they grew vegetables and fruit. Growing up, the boys had farm chores to do every day.

In spring and fall, the Thomas boys were homeschooled by their father, William, who had been a teacher. In winter, when the farm lay fallow, the boys went away for specialized study. For example, when Robert was 17, he went with two other young men to the nearby town of Spencer to improve his handwriting. The next year, he focused on arithmetic.

Robert's father loved to read and had a large library that his sons could use. Robert wrote later, "I spent most of my leisure hours reading." One of his favorite books was *Ferguson's Astronomy.* From it, he learned about the Moon, the planets, eclipses, and other celestial bodies and events—and even tried to predict their cycles and appearances. In fact, it was while reading this book that Robert first got the idea of making an almanac, a small book that is a combination calendar, reference book, and how-to guide for farmers.



[N°. I.]

THE

FARMER's ALMANAC,

CALCULATED ON A NEW AND IMPROVED PLAN,

FOR THE YEAR OF OUR LORD

1793:

Being the firſt after Leap Year, and ſeventeenth of the Independence *of* America.

Fitted to the town of BOSTON, but will ſerve for any of the adjoining States.

Containing, beſides the large number of ASTRONOMICAL CALCULATIONS and FARMER'S CALENDAR for every month in the year, as great a variety as are to be found in any other Almanac, Of NEW, USEFUL, *and* ENTERTAINING MATTER.

BY ROBERT B. THOMAS.

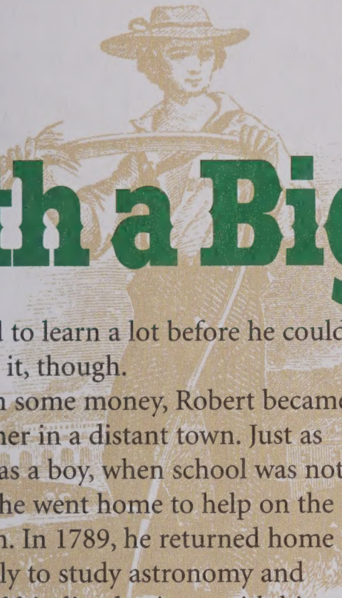
"While the bright radient ſun in centre glows,
The earth, in annual motion round it goes;
At the ſame time on its own axis reels,
And gives us change of ſeaſons as it wheels."

Publiſhed according to Act of Congreſs.

PRINTED AT THE Apollo Preſs, IN BOSTON,
BY BELKNAP AND HALL,
Sold at their Office, State Street; alſo, by the *Author*
and *M. Smith, Sterling.*
[*Sixpence ſingle, 4s. per dozen, 40s. per groce.*]

Tell Us What You Think

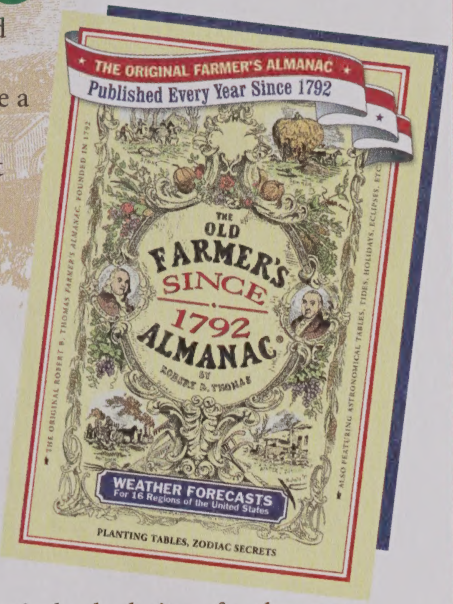
Today, Robert B. Thomas's *Old Farmer's Almanac* is the oldest continuously published periodical in North America—and this *Almanac for Kids* is the youngest! What do you think Robert B. Thomas would say about that? E-mail us at Almanac4kids.com/tellus.



With a Big Idea

He had to learn a lot before he could actually do it, though.

To earn some money, Robert became a schoolteacher in a distant town. Just as when he was a boy, when school was not in session, he went home to help on the family farm. In 1789, he returned home permanently to study astronomy and open a bookbinding business with his brother. He realized at about that time that reading about astronomy was his hobby; if he wanted to publish an almanac, he needed to learn astronomical calculations from an expert. In the summer of 1792, Robert traveled to Boston to study with Osgood Carlton, a mathematician. By the end of August, Robert had completed all of the astronomical calculations for the next year. Those calculations became the basis of his first almanac—*The Farmer's Almanac.*

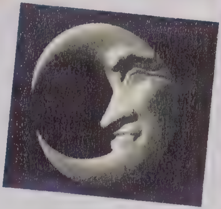

THE ORIGINAL FARMER'S ALMANAC
Published Every Year Since 1792
THE OLD FARMER'S SINCE 1792 ALMANAC
BY ROBERT B. THOMAS
THE ORIGINAL ROBERT B. THOMAS FARMER'S ALMANAC, FOUNDED IN 1792
ALSO FEATURING ASTRONOMICAL TABLES, TIDES, HOLIDAYS, ECLIPSES, ETC.
WEATHER FORECASTS
For 16 Regions of the United States
PLANTING TABLES, ZODIAC SECRETS

Robert printed 3,000 copies of his first Almanac and priced it at nine cents. It was a best-seller! He went on to publish *The Farmer's Almanac* for 54 years. In 1832, he added the word "Old" to the title. Then he changed his mind and removed it. In 1848, two years after Robert died, the new editor put the word "Old" back in the title—because the Almanac now was!

When Robert B.Thomas was a boy . . .

- Wolfgang Amadeus Mozart, age 10, was composing sonatas, 1766.
- Daniel Boone began exploring Kentucky, 1767.
- "Rubber" got its name because it rubbed out pencil marks, 1772.
- Bostonians disguised themselves as Native Americans and dumped 342 chests of tea in Boston Harbor, 1773.
- The Earl of Sandwich put meat between two slices of bread and called it a "sandwich," 1778.

ASTRONOMY



Our Mysterious, Majestic Moon
- lunar facts and phenomena 10

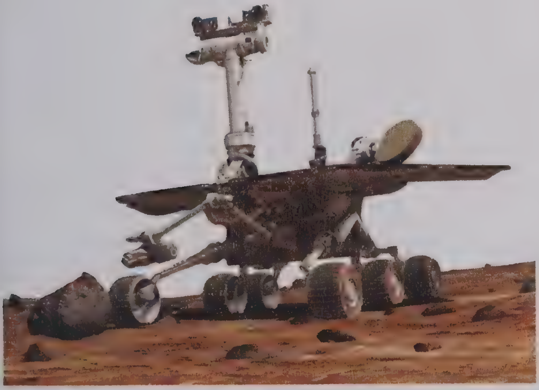
Many Moons Ago
- Native American Moon names 12

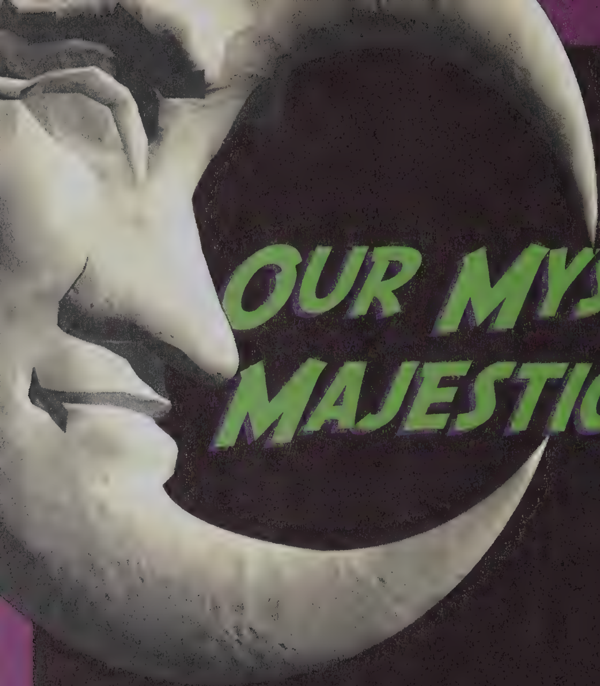
Aurora: Nature's Light Show
- the northern lights explained 14

Tricks for Finding Your Way Without a Compass
- using the skies and nature 16

Keep Your Eyes on the Skies
- astronomical phenomena and events 18

My Very Energetic Mother Just Served Us Nine Pizzas!
- the solar system and Mars 20





OUR MYSTERIOUS, MAJESTIC MOON

The diameter of the Moon is 2,160 miles. That's about the distance from Miami, Florida, to Los Angeles, California!

WATCH FOR A MOON DOG

When the Moon is low in the sky and there are high, thin, cirrus clouds nearby, you might see a moon dog. It looks like a saucer of bright moonlight beside the real Moon.

HOW HIGH?

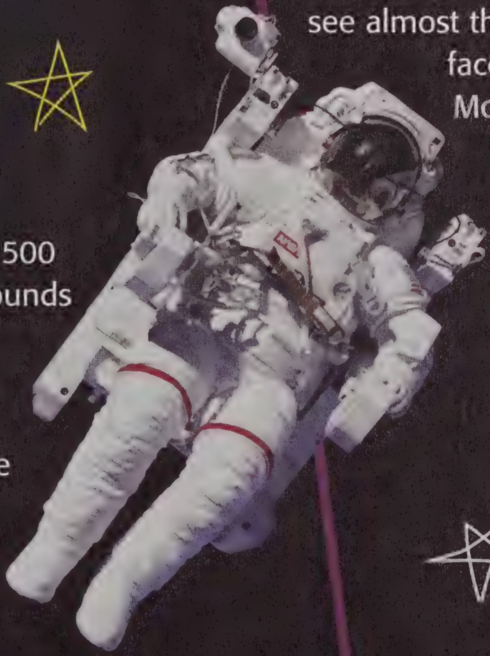
Our silvery Moon is 238,857 miles away from us, with variations of more than 30,000 miles. That's quite a stretch. Scientists say that it will take three to four days to reach the Moon for the foreseeable future. Take a lunch!

HOW LONG?

It takes the Moon 27 days, 7 hours, 43 minutes, and 11.5 seconds to spin on its own axis. This speed is almost identical to the time it takes the Moon to revolve around Earth. That's why we always see almost the same face of the Moon.

HOW HEAVY?

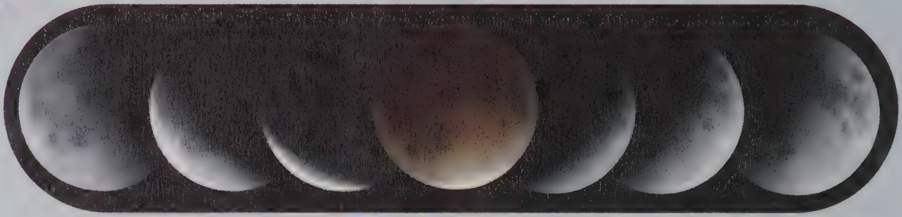
The Moon weighs 500 quintillion tons. Sounds heavy, right? But that's 81 times lighter than Earth. (And in case you're wondering, a quintillion has 18 zeros.)



"ONCE IN A BLUE MOON"

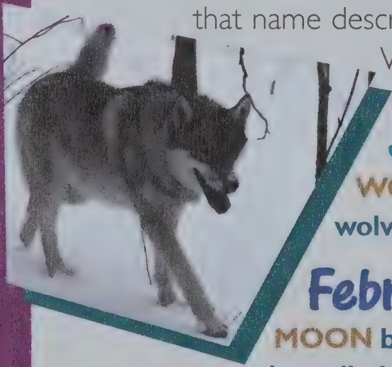
Is there such a thing as a blue Moon? Not really. The term has come to mean the second full Moon in the month, something that happens about once every 2.7 years.

See page 177 for a metric conversion chart.



Many Moons Ago

You know the names of the months, but do you know the names of the Moons? A long time ago, Native Americans gave the full Moons names based on the natural events that occurred during that Moon phase. The next time you see a full Moon, look around to see if that name describes what's happening in nature in your area. What other full Moon names can you create?



January's full Moon was called the WOLF MOON because it appeared when wolves howled in hunger outside the villages.

February's full Moon was called the SNOW MOON because it was a time of heavy snow. It was also called the HUNGER MOON because hunting was difficult and hunger often resulted.

March's full Moon was called the WORM MOON because, as the Sun increasingly warmed the soil, earthworms became active and their castings (excrement) began to appear.

April's full Moon was called the PINK MOON because it heralded the appearance of the grass pink, or wild ground phlox—one of the first spring flowers.

Find the Full Moon!

You'll find lots more fascinating facts, amazing stories, and fun activities at Almanac4kids.com. Check it out!

May's full Moon was called the FLOWER MOON because blossoms were abundant everywhere at this time.

June's full Moon was called the STRAWBERRY MOON because it appears when the strawberry harvest took place.

July's full Moon was called the BUCK MOON because it arrived when male deer started growing new antlers.

August's full Moon was called the STURGEON MOON because that large fish, which is found in the Great Lakes and in Lake Champlain, was caught easily at this time.

September's full Moon was called the CORN MOON because this was the time to harvest corn. The HARVEST MOON is the full Moon that occurs closest to the autumnal equinox. It can occur in either September or October. At this time, crops such as corn, pumpkins, squash, beans, and wild rice are ready for gathering.

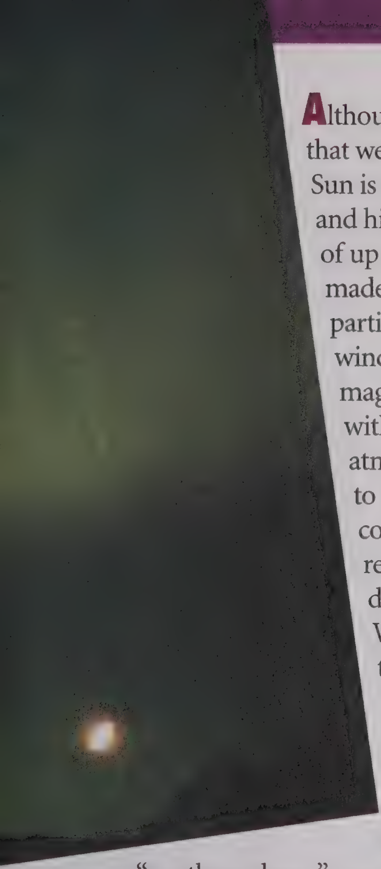
October's full Moon was called the HUNTER'S MOON because this was the time to hunt in preparation for winter.

November's full Moon was called the BEAVER MOON because it was the time to set beaver traps, before the waters froze over.

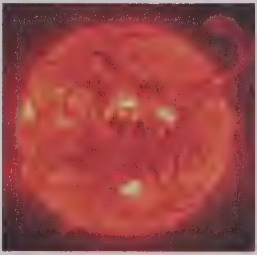
December's full Moon was called the COLD MOON. (Guess why!) It was also called the LONG NIGHTS MOON because nights at this time of year are the longest.

AURORA: NATURE'S LIGHT SHOW

Shimmering curtains of color waft in the night sky. Huge arcs and pillars of color dance and float through the dark. Nature is putting on its most dazzling light show—the aurora borealis, or northern lights.



Although it appears at night, the light show in the sky that we call an **aurora** is actually caused by the Sun. The Sun is very stormy, constantly sending out solar flares and high-energy charged particles that travel at speeds of up to a million miles per hour. **"Solar wind"** is made up of streams of these particles. As a strong solar wind gust enters Earth's magnetic field and collides with gases in the upper atmosphere, the gases begin to glow in a variety of colors—shades of green, red, yellow, purple, and blue. The particular color depends on the energy level of each gas particle. When the solar winds ripple the magnetic field, the curtains of light appear to dance, brighten, or fade.



Because of the nature of Earth's magnetic field, auroras are most often seen in the high latitudes, near the poles. In the Northern Hemisphere, the event is called the **aurora borealis,** which means "northern dawn," or northern lights. In the Southern Hemisphere, it is called the **aurora australis,** which means "southern dawn," or southern lights.

One of the most colorful auroras in recent history occurred in March 1989. It was visible in Canada and the United States and as far south as Mexico. The electrical surge that accompanied it was so strong that parts of Canada were blacked out all night!

Nobody knows exactly why, but the best time to view auroras is during the months around the spring and autumnal equinoxes, on a clear, moonless night, late at night or in the early morning, from about 10:00 p.m. to about 3:00 a.m. If you ever get a chance to see them, don't miss this spectacular opportunity!

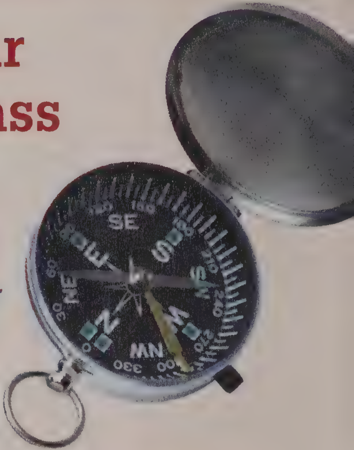
BRIGHT LIGHTS

- No two light shows are ever the same.
- The most common colors are pink and green.
- A single active display can produce one trillion watts of electricity.
- Some people claim they have heard the northern lights hiss and crackle.

Tricks for Finding Your Way Without a Compass

At Night

Use the Big Dipper



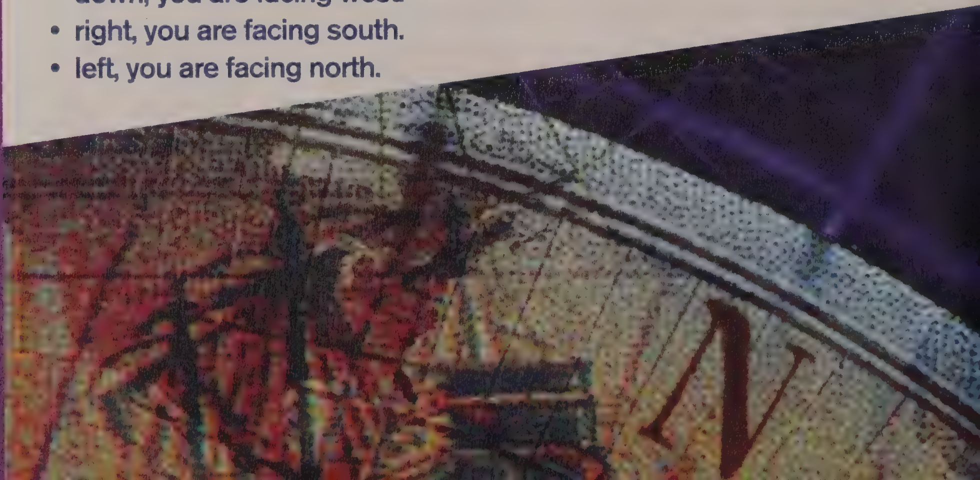
The most accurate and reliable direction finder is right over your head. It's Polaris, the North Star. Polaris is over the North Pole, so if you find it in the night sky, you will know where north is.

Here's how to find the North Star: Find the Big Dipper. Then, find the two stars at the outer edge of the dipper's bowl. These are pointer stars. They "point" to the North Star. Extend an imaginary line from the pointer stars across the sky to the next bright star. Stretch your arm out full length and spread your fingers, and the North Star should be about as far away as your thumb is from your middle finger.

Use Two Sticks in a Field

On a cloudless night, drive a stick into the ground until the tip of it is at your eye level. Behind it, plant a taller stick so that the tips of the sticks line up on a bright star, as you look at them. After a few minutes, the star will appear to have moved (but remember: stars don't move; it's Earth that's rotating). If the star seems to move . . .

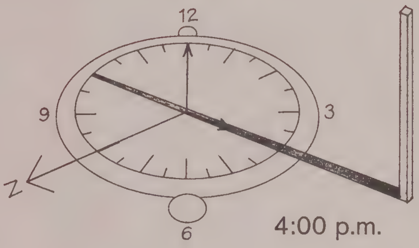
- up, you are facing east.
- down, you are facing west.
- right, you are facing south.
- left, you are facing north.



During the Day

Use a Wristwatch

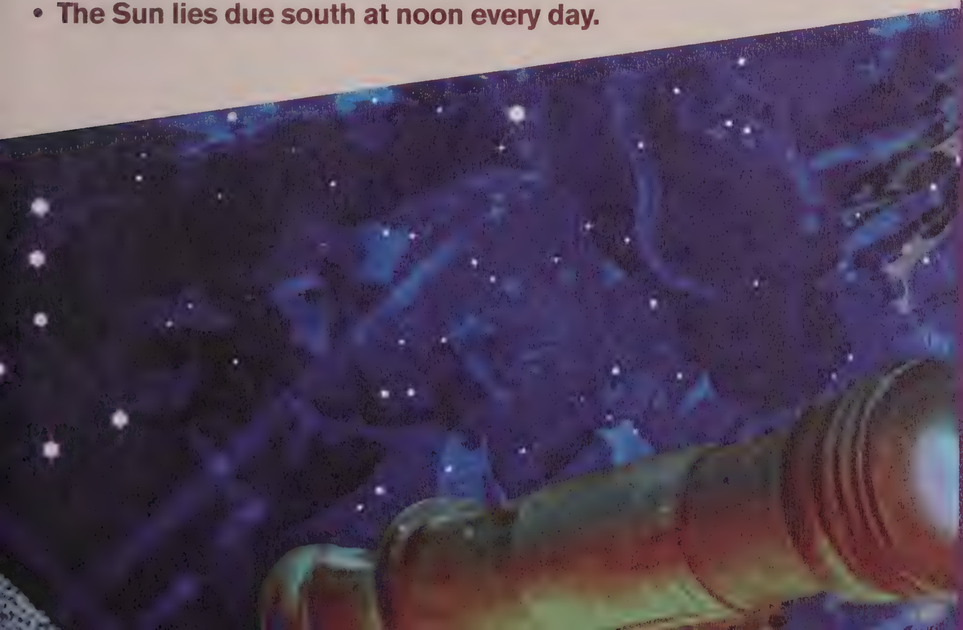
Place an analog wristwatch (one with hands) on a level surface. Hold a toothpick against the edge of the watch, so that it casts a shadow on the watch. Turn the watch until the shadow falls over the hour hand. Imagine a line that runs through the center of the watch to a spot that is halfway between the hour hand and the 12 on the dial. That line runs north–south. To get your bearings, remember that the Sun rises in the east.



Observe Nature

Look for these directional signs:

- Deciduous trees tend to grow on the south side of hills; evergreens, on the north side.
- In the desert, the giant barrel cactus always leans toward the south.
- The leaves of the pilot weed grow in a north-south line. (Settlers crossing the Great Plains called it the "compass plant of the prairie.")
- The Sun lies due south at noon every day.



Mark these dates on your calendar so that you don't

KEEP YOUR EYES

for SOLAR ECLIPSES

A total eclipse of the Sun occurs when the Moon passes directly in front of the Sun, blocking out its light. Although the entire eclipse can last a couple of hours, its spectacular **total phase** lasts only a few minutes. At any one spot on Earth, a total eclipse occurs only once every 360 years, on average.

The Eyes Must Have It! Never stare at the Sun without proper eye protection. You could cause permanent harm to your eyes.

Total eclipse dates and the unique characteristics of each

August 21, 2017. This solar eclipse will make a 185-mile-wide shadow across the continental United States from west to east.

April 8, 2024. This solar eclipse will be visible in Canada's Maritime provinces.

August 23, 2044. A total solar eclipse will begin at sunrise on the Montana border and move through the Canadian Prairie provinces toward the North Pole.

August 12, 2045. This solar eclipse will have the longest total phase in U.S. history—6 minutes, crossing from west to east.

May 11, 2078, and **May 1, 2079.** These two solar eclipses will both be visible in the United States. In Canada, the second one will be visible only in the Maritime provinces.

September 14, 2099. This solar eclipse will be visible in the north-central and mid-Atlantic states, and southwestern Canada.

miss any of this century's celestial spectacles!

ON THE SKIES

for METEOR SHOWERS

We see meteor showers, or **shooting stars,** when Earth travels through clouds of particles left by asteroids or comets. Since Earth's orbit is virtually the same from year to year, the showers are predictable. The best and most reliable showers are the Perseids, between August 11 and 13. Another good display is the Geminids, between December 13 and 14. You'll see the most meteors on a clear night during a new Moon. Spread a blanket on the ground and look up: Most are very fast. They flash by in a second or less.

for COMETS

Comets are pieces of dusty ice. When a comet flies close to the Sun, some of the ice turns into a long, bright trail, or **tail,** of vapor. That tail is a comet's most spectacular feature.

Most comets are unpredictable. Astronomers can calculate where one will be in the sky, but not how bright its tail will be. Probably the most famous one, Halley's Comet, appears every 76 years—but it doesn't always make a great show. It was spectacular in 1910 and disappointing in 1986. In 2061, it will be large and visible in the Northern Hemisphere. Let's hope that the sky is clear!

My Very Energetic Mother Just Served Us Nine Pizzas!

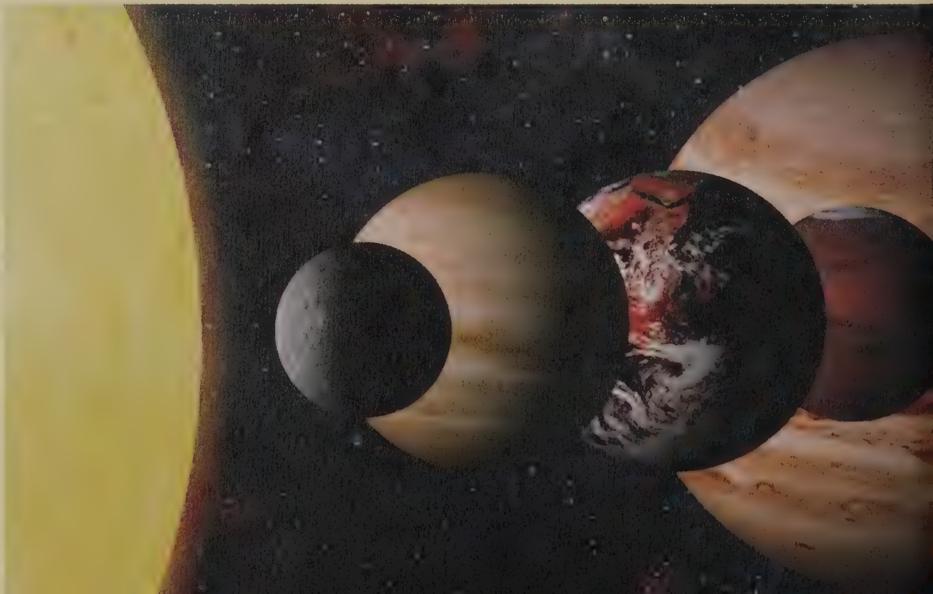
Memorize that title! It will help you remember the nine planets in order of their distance from the Sun: **Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto.** "Mother" stands for **Mars,** which has caught the attention of stargazers for centuries.

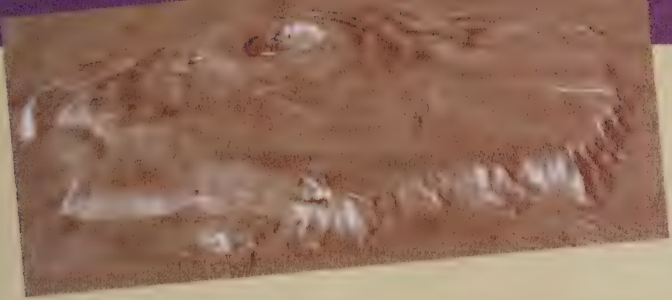
The ancient Romans named Mars after their god of war because the planet looked red, and red was the color of anger, fire, and blood. But Mars isn't red. It's rust-colored because the surface of the planet is covered with iron oxide.

Ever since astronomers in the 1800s noticed markings on Mars that looked like canals, people have imagined that there could be life on the planet (Martians!) and that someday we might be able to live there. We just might! Of all the planets, Mars is most like Earth. Mercury and Venus are hotter than humans could ever endure, and the planets from Jupiter outward have no solid surface, except for forever-frozen Pluto.

Still, Mars is not exactly like Earth. The air on Mars is as thin as the atmosphere 55,000 feet above Earth, and it's almost entirely carbon dioxide. (That's what we exhale. We inhale oxygen.) The average temperature on Mars is about –80°F (–62°C). Humans will have to build and live in climate-controlled, synthetic bubbles if they are going to survive on Mars.

This image is not to scale.





Scientists know a lot about Mars, thanks to two rovers, *Spirit* and *Opportunity,* that landed on the planet in 2004 (on January 4, EST, and on January 25, EST, respectively) and sent back photographs. Mars has polar ice caps, like those in the arctic regions on Earth. It has deserts similar to Death Valley, and craters that were once volcanoes like the ones on Hawaii. One of the most amazing land features on Mars is Olympus Mons, a 15-mile-high volcano. Another impressive feature is Valles Marineris, a huge canyon that is as wide as the continental United States!

Mars is about half the size of Earth, so it's not easy to see. Although the two planets are closest together every 26 months or so, the distance between them at this time can vary and Mars can be hard to view even then. On average, Mars is about 45 million miles from Earth. Every 15 years or so, it comes as close as 38 million miles. In August 2003, Earth and Mars were closer than they have been in 60,000 years—close enough to get people thinking about visiting our red relative.

The best time to view Mars is in the late summer. Look low in the sky during August and September for the yellow-orange ball. It will be the brightest thing you see.

(continued)

See page 177 for a metric conversion chart.

Martian Facts

Tuesday (*Mardi,* in French) was named for Mars. So was March.

*

More than half the space probes to Mars have blown up or disappeared.

*

A Martian year is 687 Earth days.

*

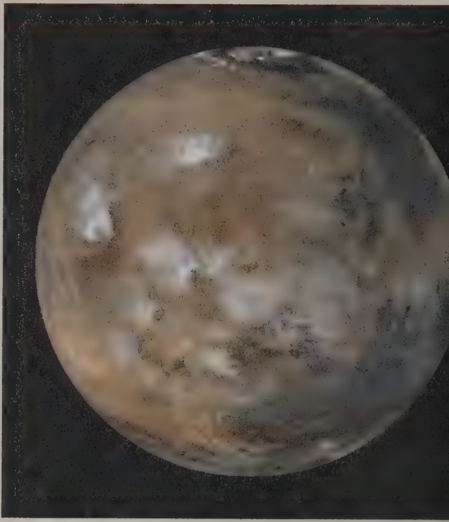
A meteorite from Mars was found in Antarctica.

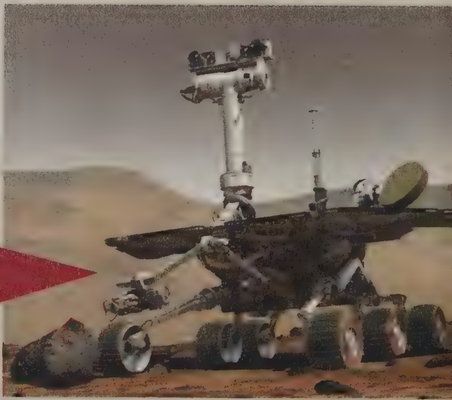
*

The names of Mars's two moons, Phobos and Deimos, come from the Greek words for fear and panic.

*

Although Mars is smaller than Earth, both have about the same land mass because so much of Earth is covered by water.





Take a Ride
If you'd like to drive a Mars rover to explore the surface of the red planet, go to Almanac4kids.com/rover.

* * * *

Weather

What's the Weather Going to Be?
- weather patterns 24

The Beaufort Wind Scale 26

The Saffir-Simpson Hurricane Scale 27

Send in the Clouds!
- how they form, different types 28

An Easy Acid Rain Test
- make a pollution solution 30

Our First Weatherman
- a few facts about George Washington 31

All Hail!
- amazing facts about hail 32

How Cold *Was* It?
- extremes of cold (and hot) weather in history 34

The Heat Index 36

The Windchill Factor 37

Look Out Below!
- the power of lightning 38

The Human Lightning Rod
- the story of a man who was struck eight times 40

Old-fashioned Forecasting
- proverbs and words of weather wisdom 42

Weird Ways to Forecast the Weather
- leeches, crickets, and ice 46

What's the Weather

weath•er\we-th̲ər\n 1. the state of the atmosphere with respect to heat or cold, wetness or dryness, calm or storm, clearness or cloudiness

Everyone, it seems, talks about the weather. Farmers need to know when to plant and when to harvest. Sailors and airplane pilots need to know which way the winds are blowing. We need to know whether we should wear a sweater or a jacket, have an umbrella or a snow shovel handy, get out the suntan lotion, or go fly a kite.

Today, scientists make predictions with data they receive from satellites. They also study large weather patterns in the atmosphere. The shapes and directions of these patterns are determined, in part, by warm and cold water in the oceans. Here's how:

- When air absorbs heat from warm ocean water (which is heated by underwater volcanoes and deep-sea currents, as well as by the Sun), it expands, becomes lighter, and rises.
- When air is cooled by chilly ocean water (and lack of heat from the Sun), it becomes heavier and sinks.

Change in air temperature affects the way air moves, creating wind. Winds influence weather around the world!

El Niño and La Niña are two weather patterns that affect North America.

Going to Be?

El Niño

The El Niño pattern is a warm water current that originates in the Pacific Ocean and slowly flows east until it reaches the coast of Peru. Then, it splits, with half of the current flowing north and half flowing south. The warm ocean water warms the air above it. Warm air absorbs moisture. When the warm water and warm air reach the west coast of North America, we get warm winters and heavy rains.

- In 1997, El Niño caused floods in the southern United States, landslides from heavy rainfall in California, and a warm winter in the northern United States and western Canada.

La Niña

La Niña (the words are Spanish for "little girl") is El Niño's chilly sister. When the Pacific Ocean cools, the air above it cools, and Canada and the U.S. Pacific Northwest have cold winters.

El Niño is Spanish for "little boy" and also refers to Baby Jesus. This weather event got its name hundreds of years ago when the Incas of Peru noticed that storminess off the coast reduced the supply of fish in December.

Hurricane Warning

Another weather pattern, the Tropical Atlantic Variability (TAV), is nicknamed "the El Niño of the Atlantic." The two patterns are similar because they are both associated with winds, but their winds blow in different directions. El Niño winds blow warm water from west to east near the equator. TAV winds blow warm water south to north across the equator.

In the summer, when warm water blown by the TAV meets a storm in the Atlantic Ocean, it energizes the storm creating a likely path for hurricanes along the U.S. East Coast.

Understanding weather patterns means that our weather forecasts may be more accurate—maybe! The one thing we can predict accurately is that weather patterns are constantly changing.

The Beaufort Wind Scale

This scale of wind speed was devised by Admiral Sir Francis Beaufort of the British Navy in 1805. He applied his Beaufort scale, as it was called, to help sailors. This version of his scale is adapted to the wind over land.

Beaufort Force	Description	Signs	Speed (mph)
0	Calm	Smoke goes straight up; no wind	less than 1
1	Light air	Smoke drifts in direction of wind; weather vane doesn't move	1–3
2	Light breeze	Wind felt on face; leaves rustle; wind vane moves	4–7
3	Gentle breeze	Leaves and small twigs move steadily; flags straighten out	8–12
4	Moderate breeze	Wind raises dust, paper; small branches move	13–18
5	Fresh breeze	Small trees sway; waves form on lakes	19–24
6	Strong breeze	Large branches move; wires whistle; umbrellas are hard to use	25–31
7	Moderate gale	Whole trees are in motion; walking against the wind is difficult	32–38
8	Fresh gale	Twigs break from trees; walking against the wind is very difficult	39–46
9	Strong gale	Some damage to buildings; roof shingles are ripped off	47–54
10	Whole gale	Trees are uprooted	55–63
11	Violent storm	Widespread damage	64–72
12	Hurricane	Widespread destruction	73+

The Saffir-Simpson Hurricane Scale

The Saffir-Simpson Scale is used to tell us how intense a hurricane is, how much damage it might do, and how much flooding it might cause if it came ashore.

CATEGORY ONE—Average wind: 74–95 mph

Not much damage to buildings, but unanchored mobile homes are threatened. Shrubbery and trees may be damaged. There may be some coastal road flooding and damage to piers and docks.

CATEGORY TWO—Average wind: 96–110 mph

Some roofing material, door, and window damage. Quite a bit of damage to vegetation, mobile homes, and piers. Coastal roads flood 2 to 4 hours before the center of the hurricane arrives. Small boats may break away from their moorings.

CATEGORY THREE—Average wind: 111–130 mph

Some structural damage to small homes and buildings. Mobile homes destroyed. Flooding near the coast can destroy smaller structures; larger structures are damaged by debris.

CATEGORY FOUR—Average wind: 131–155 mph

Some complete roof failures on small homes. Major beach erosion. Major damage to any lower floors near the shore.

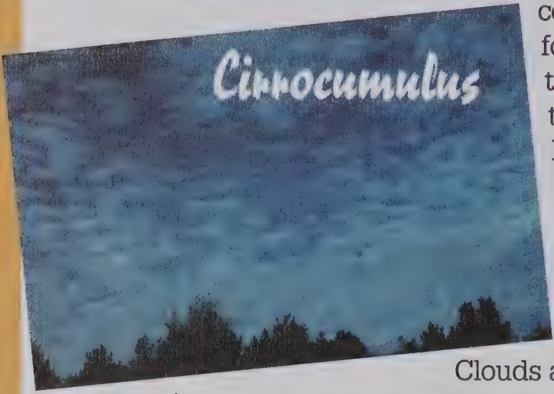
CATEGORY FIVE—Average wind: 156+ mph

Roofs blow off many residences and industrial buildings. Some small buildings are blown over or away. Major damage to lower floors of homes that are less than 15 feet above sea level and within 500 yards of the shore.

See page 177 for a metric conversion chart.

Send in the Clouds!

Exhale on a really cold day, and you will see your breath. You've just made a mini-cloud! The water vapor in your warm breath condensed into tiny droplets to form bigger drops when it met the cold air. Those tiny droplets then stuck together and formed bigger drops.



That's how clouds are made. Because Earth has a lot of water on it, the air is full of water vapor and droplets so tiny that we don't notice them. Clouds are made when warm air, which carries water vapor, rises high up into the atmosphere. The vapor cools and condenses into liquid droplets, which then stick together.

Water vapor rises when one of these things occurs:

- it is warmed by the Sun
- colder, heavier air arrives underneath it and pushes it up
- it is carried upward by being blown against hills and mountains

When warm air rises over a large area, clouds form in layers. When warm air rises quickly over a small area, puffy clouds form.

Scientists divide clouds into three types, depending on their shape and on how high they are in the atmosphere. The names of the clouds come from Latin words that describe their characteristics:

- **cirrus** means "curl" or "fringe"
- **stratus** means "spread over area"
- **cumulus** means "heap" or "pile"
- **nimbus** means "rain-bearing"

Mare's tails and mackerel scales make tall ships take in their sails. —WEATHER PROVERB

When you learn how to identify clouds, they can help you predict the weather. Use this chart when making your plans.

Cloud Type	Description	Weather Indications
High clouds form above 20,000 feet		
cirrus	thin, feathery wisps ("mare's tails")	a warm front approaching
cirrocumulus	rippled or grainy ("a mackerel sky")	a storm approaching
cirrostratus	thin, white sheets	rain
Midlevel clouds form from about 6,500 to 20,000 feet		
altostratus	bluish-gray sheet	rain
altocumulus	layers of puffy, round cloudlets	afternoon thunderstorms
Low clouds form below 6,500 feet		
cumulus	cotton balls or cauliflower heads	fair, dry conditions
cumulonimbus	dark bases, high tops ("thunderclouds")	extreme conditions: heavy rain, hail, or snow, thunderstorms, tornadoes, and hurricanes
stratus	a gray blanket ("overcast")	drizzle or fine snow
stratocumulus	layered and puffy	dry conditions
nimbostratus	a dark gray blanket	long periods of rain or snow

See page 177 for a metric conversion chart.

AN EASY ACID RAIN TEST

Is Your Rain Pink or Blue?

When harmful gases contained in air pollution react with moisture in the air, acid rain can result. Ordinary rain is naturally acidic, but highly acidic rain can be dangerous to plants, animals, insects, and other organisms all around the world.

You can test the acidity of the rain in your area with red cabbage, baking soda, and white vinegar (and, of course, some rainwater).

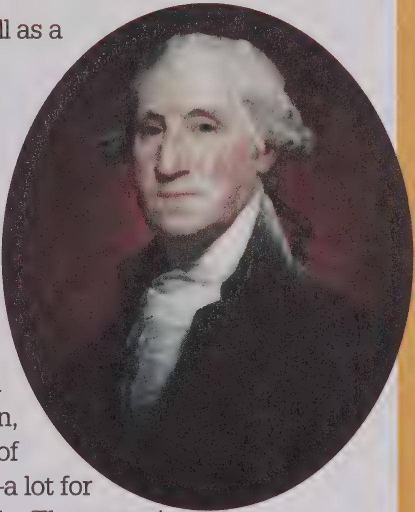
1. Chop up some cabbage until you have about 2 cups. Place it into a non-aluminum pan and add enough water to cover the cabbage. Turn the heat to high and boil it for about 10 minutes. Turn off the stove and let the water cool to room temperature.

2. Strain out the cabbage and reserve the water. (Refrigerate the water until you need it.) This purplish water will be neutral—neither acidic nor basic. To be sure, test it with the baking soda and vinegar. Put 1 teaspoon of cabbage water into two small, clear glasses. Add a teaspoon of vinegar to one glass and a teaspoon of baking soda to the other. The vinegar, which is acidic, will turn the cabbage water pink. The baking soda, which is basic, will turn the water blue.

Now you're ready to test the rain.

3. Pour 1 teaspoon of cabbage water into a third glass. Add a teaspoon of rainwater that you have collected and stored in a clean container. The cabbage water should turn pink because all rain is slightly acidic. The deeper the pink, the higher the acidity of the rain in your area.

OUR FIRST WEATHERMAN



George Washington, who was a farmer as well as a military general and the first president of the United States, was fascinated by weather. He had only a thermometer and a weather vane, but he often took readings three times a day (in the morning, at noon, and at sunset), noting the conditions in a diary. Weather records, he wrote to a friend, would be "of real utility" in maintaining his farm. Little did he know how weather would affect his life.

- On January 27, 1772, Washington reported 3 feet of snow at his residence, Mount Vernon, and Thomas Jefferson recorded about 3 feet of snow at Monticello—a lot for those areas of Virginia. The event is now known as the Washington-Jefferson storm.
- Washington's original inaugural date was March 4, 1789, but muddy roads caused by heavy rains postponed the event.
- Washington's new inauguration day was April 30, 1789. No one knows for sure what the conditions were, but records suggest that it was cloudy in the morning, with heavy rain in the afternoon.
- On January 9, 1793, under overcast, then clear, skies, Washington joined thousands in Philadelphia to witness the first manned balloon voyage in America.

Become a Weather Watcher

You can keep a weather diary just like George Washington did. In a small notebook, record the daily temperature, the wind direction, the cloud cover (see the chart on page 29), and whether conditions are dry or wet. Then, compare your notes with the forecasts for your area, available at Almanac4kids.com/weather. Before long, you'll be making your own predictions!

All Hail!

One of the most awesome and destructive weather events is a hailstorm. Hailstones are balls of ice, usually spherical in shape, that are produced in greenish-color cumulonimbus clouds during thunderstorms in the spring and summer. Hailstones start as small frozen raindrops. As they travel through the cloud on up- and downdrafts of air, they accumulate layers of ice, causing knobs, or knuckles, on the stones. When they become so heavy that the updrafts can't support them, they fall to the ground.

The size of a hailstone depends on how much time it spends in the cloud, gathering layers. U.S. weather observers describe the size of hailstones using these terms: pea, marble, penny (or large marble or dime), mothball (or nickel), quarter, half-dollar, walnut, golf ball, hen's egg, tennis ball, baseball, tea cup, grapefruit, softball. Baseball-size hail can come hurtling out of a cloud with the speed of a major league baseball pitch—over 90 miles per hour!

About 5,000 hailstorms strike the United States each year, but only about 10 percent of them have stones big enough to cause damage to crops or injure people. The areas with the most hailstorms are "hail alley" (eastern Colorado, Nebraska, and Wyoming) and the prairies of Canada.

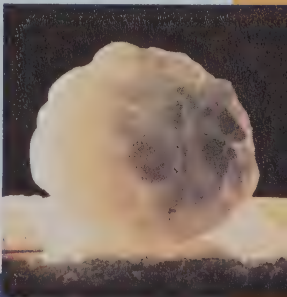
OH, MY GOSH!

It is not uncommon to find hailstones that contain things such as pebbles, leaves, twigs, seeds, bugs, and nuts, but a turtle?

- In 1930, a hailstone containing an 8-inch gopher turtle was found after a thunderstorm near Vicksburg, Mississippi.
- On July 14, 1953, a hailstorm over central Alberta, Canada, killed 36,000 ducks.

SCORE!

The record for the largest hailstone in the United States was set in Aurora, Nebraska, on June 22, 2003. It was 7 inches in diameter with a circumference of 18¾ inches—almost as big as a soccer ball.



HOW COLD WAS IT?

Chilling details about the coldest day in North America

Four weather observers at a weather station in Snag, in Canada's Yukon Territory, experienced the chill of a lifetime on February 3, 1947. On that day, the temperature there nosedived to –81.4°F (–63°C). That's colder than the average temperature on Mars!

Exposure to temperatures that cold is both amazing and dangerous, and these observers had to be outdoors for two minutes every hour. In only a few seconds, the hairs in their noses froze, tears formed in their eyes, and their nostrils iced shut. When they opened their mouths, their saliva froze. They inhaled shallow breaths because deep breaths of air that cold could have flash-frozen their throats and lungs. When they exhaled, they heard a tinkling sound as their breath froze into ice crystals. When they spoke, their "words" hung in the air like mist for several minutes before fading away.

Fortunately, no one suffered any serious injuries on that day.

A Few More Frigid Factoids

A person trapped by flames during a hotel fire in Winnipeg in 1879 escaped by pouring a pitcher of water out a window and sliding down the icicle it made.

Cold temperatures in Manitoba caused smoke to freeze in a chimney and choke out the fire below in 1948.

It was so cold in southern Saskatchewan in January 1938 that cattle had to walk while they peed, so that the icicles they made didn't freeze them to the ground.

On December 20, 1836, temperatures in central Illinois dropped from 40°F to 0°F (4°C to –18°C) in a sudden cold snap that was said to freeze chickens in their tracks.

The world record for the coldest temperature was reached in Vostok, a Russian scientific station in eastern Antarctica. On July 21, 1983, the thermometer there reached –129°F (–89.4°C). That makes Snag's record day seem snug, don't you think?

> There was a small boy of Quebec
> Who was buried in snow to the neck;
> When they said, "Are you friz?"
> He replied, "Yes, I is—
> But we don't call this cold in Quebec."
>
> **–Rudyard Kipling, English writer (1865–1936)**

HOT STUFF

- The world record for the hottest temperature goes to El Azizia, Libya. On September 13, 1922, the mercury hit 136°F (58°C).
- Greenland Ranch in Death Valley, California, holds the record for the highest temperature in North America. On July 10, 1913, it was 134°F (56.6°C).

The Heat Index

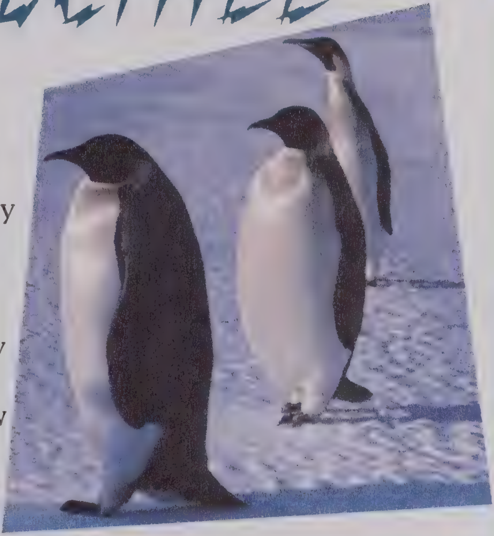
As the humidity in the air increases, the temperature of the air feels hotter than it is on the thermometer. The combination of high heat and high humidity means that your body is less able to cool itself. The chart below shows you how humidity can affect how hot you feel. For example, if it is 90°F on the thermometer and the humidity is 70 percent, you will feel like it is 106°F. In other words, hot!

% Humidity	Actual temperature (°F) 80	82	84	86	88	90	92	94	96	98	100
			Equivalent temperature (°F)								
40	80	81	83	85	88	91	94	97	101	105	109
45	80	82	84	87	89	93	96	100	104	109	114
50	81	83	85	88	91	95	99	103	108	113	118
55	81	84	86	89	93	97	101	106	112	117	124
60	82	84	88	91	95	100	105	110	116	123	129
65	82	85	89	93	98	103	108	114	121	128	136
70	83	86	90	95	100	106	112	119	126	134	
75	84	88	92	97	103	109	116	124	132		
80	84	89	94	100	106	113	121	129			
85	85	90	96	102	110	117	126	135			
90	86	91	98	105	113	122	131				
95	86	93	100	108	117	127					
100	87	95	103	112	121	132					

To convert these temperatures to Celsius, see page 177.

THE WINDCHILL FACTOR

As the wind speed increases, the air temperature against your body falls. The combination of cold temperature and high wind creates such a severe cooling effect that your flesh can actually freeze. Check out the Beaufort Wind Scale (page 26) to learn how to judge the speed of the wind and then check out this chart to see how cold you'll feel.



Temperature (°F)

Wind Speed (mph) / Calm	35	30	25	20	15	10	5	0	−5	−10	−15	−20	−25	−30	−35
5	31	25	19	13	7	1	−5	−11	−16	−22	−28	−34	−40	−46	−52
10	27	21	15	9	3	−4	−10	−16	−22	−28	−35	−41	−47	−53	−59
15	25	19	13	6	0	−7	−13	−19	−26	−32	−39	−45	−51	−58	−64
20	24	17	11	4	−2	−9	−15	−22	−29	−35	−42	−48	−55	−61	−68
25	23	16	9	3	−4	−11	−17	−24	−31	−37	−44	−51	−58	−64	−71
30	22	15	8	1	−5	−12	−19	−26	−33	−39	−46	−53	−60	−67	−73
35	21	14	7	0	−7	−14	−21	−27	−34	−41	−48	−55	−62	−69	−76
40	20	13	6	−1	−8	−15	−22	−29	−36	−43	−50	−57	−64	−71	−78
45	19	12	5	−2	−9	−16	−23	−30	−37	−44	−51	−58	−65	−72	−79
50	19	12	4	−3	−10	−17	−24	−31	−38	−45	−52	−60	−67	−74	−81
55	18	11	4	−3	−11	−18	−25	−32	−39	−46	−54	−61	−68	−75	−82
60	17	10	3	−4	−11	−19	−26	−33	−40	−48	−55	−62	−69	−76	−84

▨ Frostbite occurs in 30 minutes or less

To convert these temperatures to Celsius, see page 177.

Look Out Below!

Lightning bolts last only a few milliseconds, but carry 1,000 watts of power.

Lightning flashes across the sky 50 to 100 times per second—that's 8 million times a day. Almost 80 percent of lightning strikes occur within clouds, but when a lightning bolt does strike Earth, it descends from a cloud in a series of steps.

Before lightning strikes, ice crystals build up electrical charges inside a cloud. Positively charged crystals gather in the colder upper regions of the cloud and the negatively charged crystals migrate to the warmer bottom of the cloud, where they become water droplets. As the cloud's electrical field intensifies, its negative charges cause opposing positive charges to cluster on the ground under the cloud. Eventually, the air below the cloud ionizes so that it can conduct electricity.

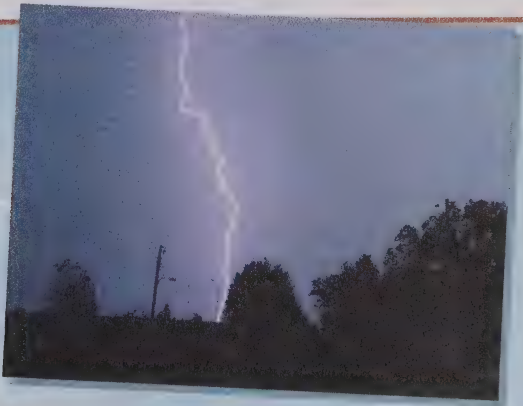
Then, in an instant, opposites attract. In cloud-to-ground lightning, a streak of negative charges from the cloud, called a step leader, takes 200-foot steps, slicing its way in zigzag fashion to Earth at about 100 miles per second. As the leader approaches the ground, a string of positive charges, called a streamer, reaches upward, usually from an elevated object, such as a building or tree, toward the cloud. When the streamer meets the leader, the connection creates a pathway through the sky that is less than an inch wide. An electrical current then races up the path at the speed of 75,000 miles per second. We see that positively charged return stroke as a flash of lightning.

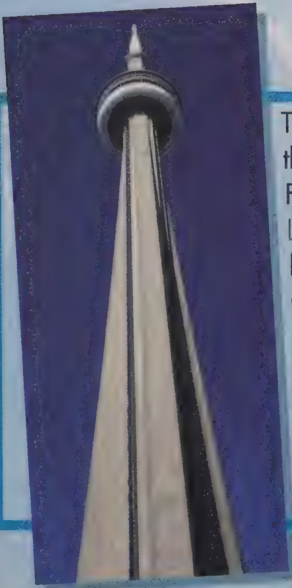
The heat in a lightning bolt is almost five times hotter than the surface of the Sun, and it's the heat that causes the flash of light that we see. Thunder is produced when the hot air around the pathway suddenly expands, creating sound waves.

Lightning and thunder occur at the same time, but light travels faster than sound, so we see lightning before we hear its thunder. Knowing that, you can calculate how far away a storm is. Start counting when you see lightning. Thunder travels at a speed of about 5 seconds per mile. If you count to 10 before hearing thunder, the storm is about 2 miles away. If you never hear thunder after seeing the lightning, the storm is probably more than 20 miles away.

Enlightening Lightning Facts:

- More than 2,000 thunderstorms occur in the world at any given moment.
- Sometimes lightning takes the form of grapefruit-size balls of fire that roll on the ground.
- More lightning strikes occur in Central Africa than in any other place in the world.
- Lightning starts about 14,000 forest fires in North America every year.
- Men are struck by lightning four times as often as women.

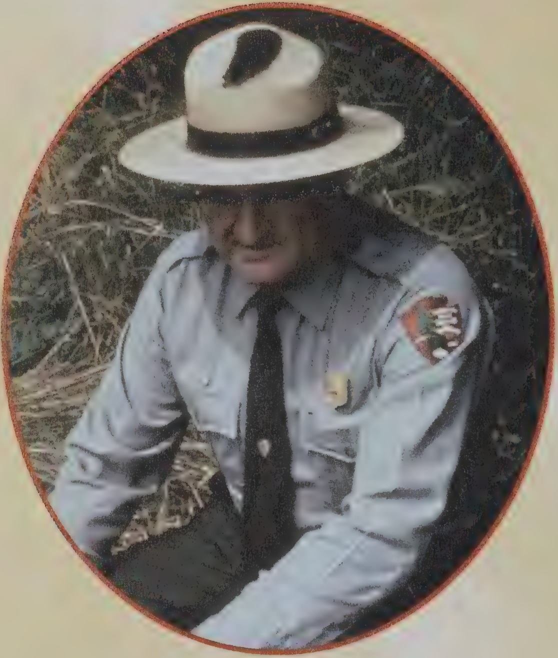




There's an old saying that lightning never strikes in the same place twice.

False!

Lightning does strike the same places, especially high places. The Empire State Building in New York City, for instance, is hit by lightning almost 100 times a year, and the CN Tower *(left)* in Toronto is struck more than 75 times each year. Metal conductors built into the towers connect to grounding rods buried deep below the surface of the Earth that direct the bolts' power safely into the ground.



The Human Lightning Rod

He was struck by lightning eight times.

The first time lightning struck Roy C. Sullivan, he had just been promoted to ranger at Shenandoah National Park in Virginia. It was 1942, and he was 30 years old. The bolt hit his head, traveled through his body, and left through his foot. Remarkably, he lost only his big toenail.

Twenty-seven years passed before lightning struck Sullivan again. The second time, it burned off both of his eyebrows. A year later, the third strike burned his shoulders. Two years after that, lightning set his hair on fire. After the fifth strike, which burned a large hole in his hat and knocked his shoes off his feet, doctors told him that the lightning had scorched his body inside and out. When strike six set his head aflame again, his family thought that he was going to die.

By this time, even Sullivan's friends were afraid to be near him during a storm. One day, he was helping his wife, Pat, hang laundry outside when a storm suddenly came up. Lightning struck Pat's shoulder, traveled down her right arm, and went out of her left foot. It made her tired and unhappy. She wondered how her husband had remained so cheerful after being hit so many times.

In 1977, the seventh bolt hit Sullivan and left him hospitalized with chest and stomach burns. It seemed to drain more life out of him, but it also made him famous. After the seventh strike, Roy C. Sullivan was entered into the *Guinness Book of World Records* as the only man struck by lightning seven times. His record still stands—but not at seven lightning strikes. He never told the record keepers about the eighth—and last—time he was struck, in 1983. He died soon after, and never knew why he was so unlucky around lightning.

HOW TO AVOID THE STRIKE ZONE

Beware the oak, it draws the stroke.

—WEATHER PROVERB

The chance that you will be struck by lightning is more than 600,000 to one, but it's wise to remember these tips when a thunderstorm threatens. If you are outdoors and can not get into a house, building, or car . . .

1. Do not seek shelter under a tree.
2. In an open area, squat down, with your head between your knees. Do not lie down on the ground.
3. If you are swimming, get out of the water.
4. Move away from bicycles, tents, golf carts, and metal fences.

Old-fashioned forecasting (that still works today!)

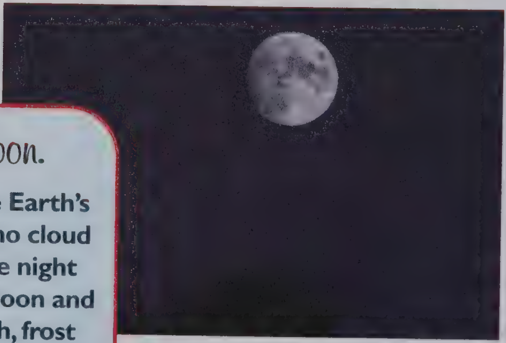
Some are weatherwise, others are otherwise.
–BENJAMIN FRANKLIN, AMERICAN INVENTOR AND AUTHOR (1706–1790)

Long before meteorologists had sophisticated technology to help them predict the weather, people made forecasts based on their observations of the sky, animals, and nature. Many of the traditional sayings they used, called proverbs, are accurate. See if these proverbs work for you.

Red sky at night, sailors delight. Red sky in morning, sailors take warning.

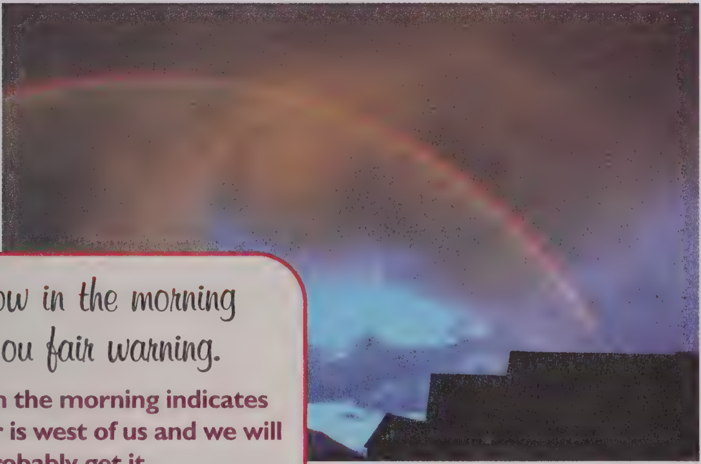
When the light of the setting Sun hits a high concentration of dust particles in the air, we see a pink or red sky. Dust in the air means that the air is dry. Since weather in North American latitudes usually moves from west to east, a red sky at sunset means that dry weather—good for sailing—is moving east.

When the sky is red or pink in the morning, it means that the rising Sun's light is reflecting on dust particles and dry air from the west that have already passed over us on their way east, clearing the way for a storm to move in.



Clear Moon, frost soon.

When the night sky is clear, the Earth's surface cools rapidly—there is no cloud cover to keep the heat in. If the night sky is clear enough to see the Moon and the temperature drops enough, frost will form.



Rainbow in the morning gives you fair warning.

A rainbow in the morning indicates that a shower is west of us and we will probably get it.
(A rainbow in the evening indicates that a shower is east of us and we won't get it.)

A year of snow, a year of plenty.

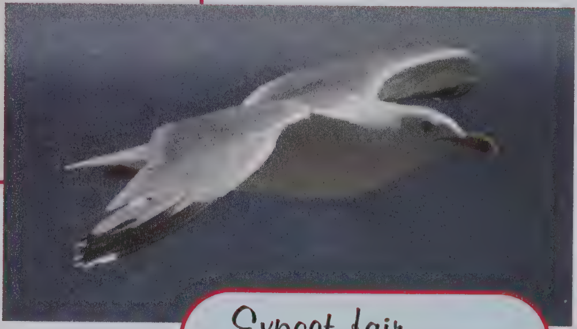
Farmers expect a good growing season and a good harvest following a winter when their fields and orchards have been covered with snow. The snow delays the fruit tree blossoms until the danger of damaging frosts has passed, and prevents thawing and freezing cycles that destroy wheat and winter grains.

Expect a cold winter when . . .

- a mole digs its hole 2½ feet deep
- pigs gather leaves and straw in the fall
- rabbits are fat in October and November
- a goose's usually white breastbone is red- or dark-spotted
- domestic geese walk east and fly west
- hornets build their nests near the ground
- the bushes are full of berries

Expect a storm when . . .

- seagulls fly inland
- petrels (seabirds) gather under the stern of a ship
- wolves howl
- a crow flies alone
- clover contracts its leaves



Expect fair weather when . . .

- sheep ascend the hills and scatter
- bats fly late in the evening
- fireflies are numerous
- frogs sing in the evening
- crows fly in pairs
- wet spider webs dry quickly

Expect rain when . . .

- horses stretch out their necks and sniff the air
- cats sneeze or wash behind their ears
- bats cry out and fly to their homes
- cattle lie down in the pasture
- sheep turn into the wind
- dogs roll on the ground, eat grass, or straighten their tails
- a sunflower raises its head
- the leaves of a tree curl with the wind from the south
- corns or wounds itch or ache more than usual

WEATHER IN A WORD

January: **snowy**
February: **flowy**
March: **blowy**
April: **show'ry**
May: **flow'ry**
June: **bow'ry**
July: **moppy**
August: **croppy**
September: **poppy**
October: **breezy**
November: **wheezy**
December: **freezy**

–Richard Brinsley Sheridan, Irish dramatist and politician (1751–1816)

WEIRD WAYS TO FORECAST THE WEATHER

Catch a Leech

You can have your own personal, all-natural, weather forecaster if you can snag a leech from a pond. Put your leech in a large glass jar, about two-thirds filled with water, and cover the top with a piece of cheesecloth.

- If the leech lies still on the bottom of the jar, the weather will be fine.
- If it climbs to the top and stays there, expect rain (or snow, in winter).
- If it moves a lot and quickly, heavy winds are coming.

People in the 1800s claimed that this really worked!

Consult a Cricket

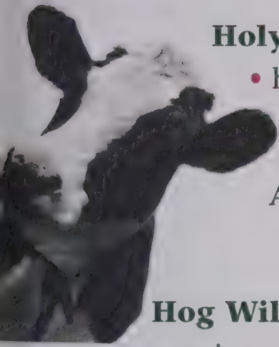
Did you know that crickets rub their legs together (which produces chirps) at different speeds, depending on the temperature of the air? A cricket will tell you what the temperature is, if you count the chirps.

- To figure out how hot it is in degrees Fahrenheit, count the number of cricket chirps in 15 seconds and add 37.
- Figuring out how hot it is in degrees Celsius is a little more complicated. Count the chirps in 25 seconds, divide by 3, and then add 4.

Throw Water

On a really, really, really, cold day, pour warm water into a cup, go outside, and throw the water into the air. If the water freezes in midair and sounds like breaking glass when it hits the ground, the temperature is about –65°F (–54°C). Now, get back inside!

On the Farm



Holy Cow!
- how cows eat and how milk is made 48

All About Eggs
- how eggs are made and more 52

Hog Wild!
- pigs, pigs, pigs 54

Good, Ol' Goats
- history, lore, and more 58

Fantastic Farm Facts 60

Holy Cow!

Fun facts about the animals that give us milk.

Every day, cows spend six hours gathering food to fill their stomachs. A cow gulps down about 100 pounds of grass, hay, and grain, and drinks about 40 gallons of water daily.

* * *

All of that food passes through the cow's complex stomach. First, unchewed grass, hay, and grain collect in the biggest stomach chamber, which can hold about 30 gallons. When that's full, the food moves to a smaller chamber, where digestive juices ferment the food and turn it into little balls. When the small balls are partially digested, cows burp them back up. That "food" is now called the **cud.** A cow grinds the cud for hours, chewing about 50 times each minute. When she swallows it a second time, it goes back through the first two chambers and into the third one, where bacteria break it up. It is finally digested in the fourth chamber.

* * *

Cow manure is called a cow patty (or plop or pie or chip). Cows produce 65 pounds of patties and about 30 pounds of urine every day! Cow patties are used as fertilizer, and a big pile of patties can produce electricity. Farmers store the manure in special digester tanks, where bacteria break it down until it releases methane gas. The gas is then used to generate electricity. Years ago, pioneers used dry cow chips like firewood to heat their homes and stoves. Today, you're more likely to see people hurl them competitively in cow-chip tossing contests at county fairs and rodeos. Try it, if you're at a fair.

(continued)

Udderly Incredible

WHOLE MILK
Milk
Milk

Cows can not make milk until they've given birth to a calf. Then they can make lots of it! An average cow can produce enough milk every day to fill 100 eight-ounce glasses.

◆

Cows need only grass and fresh water to make milk. Nutrients from the grass are absorbed into the cow's bloodstream and passed to her udder, where milk is produced.

◆

On most big dairy farms, cows are milked by machines. In one hour, using milk machines, a farmer can milk 100 cows, whereas the same farmer could only milk six cows by hand, always from the right side. When a cow is milked by hand, its udder is emptied completely, and that stimulates the cow to make even more milk. It takes about 345 squirts of a cow's udder to get a gallon of milk. The milk that comes out last is the richest and creamiest because it's mostly butterfat.

Did You Know?

- According to folklore, heavy thunder will sour milk.
- Milk is 87 percent water.
- A milking cow usually lives to be 10 to 12 years old.
- Most cows like to be rubbed under the chin and behind the ears, and they like to have their backbones scratched with a long-handled brush. They don't like their faces rubbed.

Milk Machines

All About Eggs

Unscrambling the
mysteries of
the chicken
and the egg.

The Hardboiled Facts

A female chicken is a hen. A male chicken is a rooster. Their offspring are called chicks. When a chick is six months old, it begins producing eggs for us to eat. Then it is called a hen or a layer.

It takes a hen about a day to produce an egg, and every egg begins as a yolk. First, a hen wraps the yolk in the white, called **albumen.** That takes about three hours. She spends the next 20 hours making the shell, which will be brown or white, depending on her breed. When the shell is finished, she lays that egg, and within about a half hour, she begins again with another yolk.

Chicken feed contains pigment that makes yolks yellow. A hen stores the pigment in her beak, legs, and toes—sometimes even in her ear lobes—until she needs it for the yolks. It's rare, but not unusual, for a hen to produce an egg with no yolk at all. The record for the number of yolks in a single egg is nine.

Good egg-layers produce 270 to 300 eggs per year. The world egg-laying record, set in 1979, is 371 eggs in 364 days. That's 1.02 eggs per day!

See page 177 for a metric conversion table.

CHICKEN RIDDLES

Q: Why did the hens stop laying eggs?
Q: Why was the chicken thrown out of the baseball game?
Q: Why did the chicken cross the road?

A: They got tired of working for chicken feed.
A: The umpire suspected fowl play.
A: Because the rooster egged her on.

All Yolking Aside

Eggs look solid, but they are full of holes. Every eggshell has 6,000 to 8,000 pores, which allow oxygen to pass in and carbon dioxide to pass out as the baby chick develops inside.

Eggs seem fragile, but they are surprisingly strong. People have been testing that strength for years.

- In 1970, a firefighter climbed to the top of a 70-foot-high ladder and dropped 10 eggs. Only three broke.
- On August 22, 1994, David Donoghue dropped eggs onto a golf course from a helicopter 700 feet in the air. The eggs survived, and Donoghue holds the world egg-dropping record.
- On November 12, 1978, Johnie Dell Foley threw an egg 323 feet, 2 inches to his cousin Keith Thomas, who caught it intact. Now the cousins hold the world egg-throwing record.

Want to see for yourself how strong an egg is? Hold one between your palms, end to end, and interlace your fingers over the top. Now tighten your grip by squeezing your hands together. If your egg breaks, scramble it.

A BALANCING ACT

According to folklore, a raw egg can be stood on its fat end only twice a year—on the spring equinox, around March 21, and on the autumnal equinox, around September 23. On those days, the length of the day and night are approximately the same all over the world. Try it!

Hog Wild

The next time your mom tells you that you're as filthy as a pig or that your room looks like a pigsty, thank her!

* * *

Pigs are some of the cleanest animals in the barnyard. They keep their pens neat if they are given clean hay and a place to root around. They poop in a corner, away from their sleeping area. (A lot of other animals, such as cows and sheep, poop everywhere!) Because pigs don't sweat, heat and sun can be dangerous for them. So to keep cool, they wallow in mud or lie in the shade. Want to make a pig happy? Make sure he has toys, such as a bucket or a strip of cloth tied to a fence, and on hot days squirt him with a hose or put him in a shallow pool—pigs are excellent swimmers!

Pigs are smart—and, some people say, easier to train than dogs. Pigs have their own language. They shriek when they are scared, they bark to sound an alarm, they roar when they are hungry, and they grunt when they are happy.

* * *

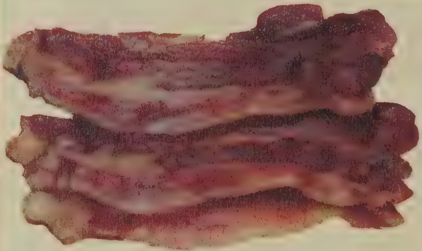
Pigs have poor eyesight, but they have an excellent sense of smell. In France, they are used to sniff out a delicious kind of fungus, called a truffle, that grows below ground in the forest. Pigs are pretty good at finding clams at the seashore, too, and hunters use them as pointers. On the farm, many pigs earn their keep by turning the soil and uprooting weeds.

* * *

Pigs are playful and enjoy each other's company. They like to have their ears scratched and to give wet kisses (especially when they see the food pail). Pigs are also persistent: They will try anything—climbing, digging, and jumping—to escape from a pen.

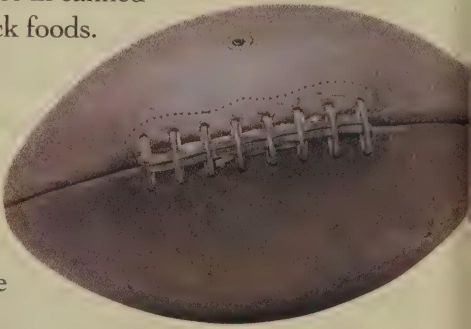
(continued)

Bacon and Beyond



Besides giving us pork, bacon, ham, and lard, pigs provide the raw material for many other things:

- Pigskin leather is used for gloves, jackets, shoes, furniture, and footballs.
- Pigskin is processed into gelatin for use in canned meats, ice cream, jelly, and other snack foods.
- Pigskin is used to dress burn victims' wounds.
- A pig's pancreas is used to make insulin for people with diabetes.
- Pig valves are transplanted into the bodies of people who have heart valve problems, enabling those people to live normal lives.
- Pig fat is used in toothpaste, mouthwash, cosmetics, and soap.



NAME THAT SQUEAL

In the 1830s, an inventor in Cincinnati, Ohio, created a "musical instrument" called the Porco-Forte. The name gives two clues about the instrument: "Porco" refers to pigs, and "forte" is a Latin word for loud. The inventor arranged pigs in compartments, based on the pitch of their squeal. Then he "played" the instrument by squeezing the pigs' tails. The squeals produced music—or so he claimed.

Never eat more than you can lift.
–Miss Piggy

Pig Pile!

Amazing and amusing facts about pigs:

- The largest pig in the United States was Big Bill, a Poland China hog from Tennessee that in 1933 weighed 2,553 pounds and was 9 feet long.
- The world record for a pig high jump is held by a pot-bellied pig named Kotetsu, who lifted his roly-poly self 27½ inches off the ground on August 22, 2004, in Mie, Japan.
- The average number of piglets in a litter is 12, but the world record is 34, born to a sow in Denmark in 1961.
- Forty-eight piglets were used in making the film *Babe*.
- Francis the Pig, who escaped from a Red Deer, Alberta, slaughterhouse in 1990 and eluded capture for five months, is immortalized with a bronze sculpture in that town.

Good, Ol' Goats

Historians tell us that goats—not cows, not sheep, not horses—were the first animals to be domesticated. They show up in pictures drawn on the walls of European caves 12,000 years ago. Ancient Egyptians worshiped goats and Greeks sacrificed them, calling them "scapegoats." In the Middle Ages, people thought goats were devils because they had **cloven hooves.**

Goats are curious, mischievous, and affectionate, but they have quirky personalities. They like warm, clean stalls, and they hate to get wet. Like pigs, goats don't like to be fenced in, but unlike pigs, goats are picky eaters. They like to browse twigs and leaves, graze pastures, and eat fruit right off the tree. They won't eat food that has spoiled, and they do not eat tin cans. Those are myths.

Farmers breed and raise goats for milk and cheese, meat, and wool. Worldwide, more people drink goat milk than any other variety. It's nutritious and easier to digest than cow's milk, yet it tastes

Trumpet in a herd of elephants,
crow in the company of cocks,
bleat in a flock of goats.
–Malayan proverb

about the same. Mahatma Gandhi, one of India's great spiritual leaders, lived mostly on goat milk for 30 years.

Goat, the Poor Man's Cow

Centuries ago, farmers who couldn't afford cows kept goats. Goats survived in most climates and in poor pastures, provided milk and meat, and could be traded for other goods.

The Mysterious "Fainting" Goats

According to legend, in the 1880s, a Nova Scotia farmer named John Tinsley settled in Tennessee, bringing four goats with him. The goats were known as stiff-leg, or fainting, goats because whenever they were startled or excited, their muscles seized up and they fell over. People thought the goats had fainted, but they were fine and stood up within minutes. Tinsley's goats became known as Tennessee fainting goats—and they are still called that today. You can recognize one by its ears: They stick out horizontally. Most goats' ears are upright.

If someone "gets your goat," it means you are upset about something that person did. The expression comes from horse racing. It was the custom to keep a goat in each stable as a companion to a racehorse. The goats had a calming effect on the high-strung horses. If someone stole your goat, your horse would be upset and would probably run a poor race.

Pygmy, or dwarf, goats are popular with children who raise goats to show at county fairs.

Fantastic Farm Facts

chickens and Eggs

- There are more chickens than there are humans in the world. In the United States alone, there are more than 450 million chickens.
- The egg is one of nature's most nutritious foods. Each large egg contains 6 grams of protein (good for energy!) and 15 to 30 percent of the B vitamins you need every day. All that in a mere 70 calories.

cows

- Cows have a better sense of smell than humans do. They can detect odors from up to 5 miles away.
- Cows can jump, but not over the Moon. If they are running fast enough, they can make it over most farm fences.
- Cows have almost 360-degree panoramic vision. Don't try to sneak up on one!

Pigs

- The world's smallest pigs are the endangered pygmy pigs of northern India and Nepal. Adult males are only about 25 inches long and weigh about 18 pounds.

goats

- There are about 500 million goats in the world.
- An ancient Egyptian pharaoh loved his goats so much that he had 2,234 of them buried with him when he died. (Hope they buried him holding his nose!)

Gardening

This Beauty Is a Beast
- the deadly Venus flytrap 62

Good and Rotten
- composting, vermiculture 64

What's Big and Orange and Weighs 1,446 Pounds?
- giant pumpkins 68

Spotlight on Spuds
- potato facts and a trash-can trick 70

How Does Your Garden Grow?
- friends and enemies in the garden 72

Grow Trash-Can Potatoes 74

Plant a Vegetable Garden . . . 75

Gardening Tips 76

THIS BEAUTY IS A BEAST

THE FLY MAKES A LANDING. THE FLESHY FANGS ON THE LEAF QUIVER, AND THEN CLAMP DOWN WITH LIGHTNING SPEED! THE VENUS FLYTRAP STRIKES AGAIN—AND ANOTHER UNSUSPECTING VICTIM HAS MET ITS DOOM.

The Venus flytrap, probably the most well-known of nature's flesh-eating plants, is one of more than 600 kinds of plants that capture, kill, and eat other living things. Most of these carnivorous plants live in swamps and bogs. Some, like the pitcher plants of Borneo, are so big that frogs and rodents have reportedly disappeared into their deadly clutches!

The Venus flytrap is not that big. Most of its leaves are about the size of a human finger—perfect for catching bugs such as flies, spiders, and crickets. The Venus flytrap attracts its hungry prey with sweet nectar. The insects expect to have lunch; they don't expect to *be* lunch! The plant's leaves are lined with trigger hairs that act as motion detectors. If an insect touches these hairs enough, whoop! The leaf snaps shut on the bug as quickly as you can blink an eye.

Once the two halves of the leaf clamp shut, they squeeze tighter and tighter until they become flat. **Cilia,** the little hairs that line the edge of each leaf, interlock and lace together so that the insect and the plant's digestive juices can't escape, and bacteria and mold can't get inside.

The leaf remains closed, while its digestive juices dissolve the insect. When the plant has finished its meal, it "swallows" by reabsorbing its juices and the liquefied nutrients from the insect. Then the leaf reopens, and any remaining bits of the bug are blown away or washed off by rain.

After a few meals, Venus flytrap leaves lose their ability to catch anything. They stay open and act like regular leaves, while the plant produces new trapping leaves. After a couple of months, the old leaves die.

You can grow a Venus flytrap at home with a cutting from another plant (ask a friend who has one). You'll need a big jar with a lid, some coarse sand, and some green sphagnum moss.

- Put the sand in the jar and then add the moss.
- Stick the Venus flytrap leaf stalk in the moss, letting the leaf lie on top.
- Add enough water to moisten the moss, poke some holes in the lid, and put the lid on the jar.

Little plants will grow from the leaf. Remember, these plants are swamp dwellers. They like heat and dampness, so put your jar in a sunny window for a few hours, but don't let it get too hot. Take the lid off once in a while, and then watch what happens when insects come near! No insects around? Your plant will grow more slowly than one that gets live food, but it will be fine.

THE PLANT HAS NOTHING TO DO WITH THE PLANET.

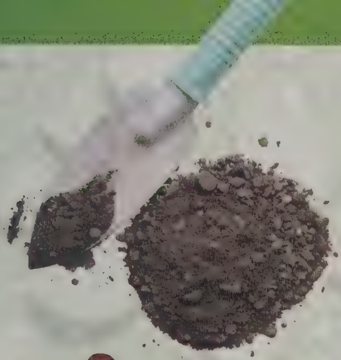
The Venus flytrap, also known as *Dionaea muscipula,* gets its names from Greek mythology: Dione was the mother of Aphrodite, the goddess of love, who was also called Venus.

GOOD AND ROTTEN

Rotting is important for all living things. Imagine what life would be like if nothing ever rotted. The world would be covered with garbage! Luckily, there are worms and microorganisms that are very happy to eat most of our food waste—eggshells, banana peels, apple cores, and more—and turn it into dark, crumbly stuff called compost.

Rotting takes place all the time in forests and other places where leaves and vegetation lie undisturbed. Turn over a pile of leaves under a tree in the woods, and you'll find a damp pile of gunk and probably a few fat worms. That's compost.

When compost is mixed into the soil, plants grow better and produce more or bigger flowers, vegetables, fruit—whatever is their specialty. You can make compost in your own yard. It's easy. Your plants will love you—and so will your garbage collectors.



How to Compost

One way is to rake up leaves and grass clippings and put them into a pile. Come back in a year or two, and your pile will be "cooked" into compost.

A quicker way to compost is to find a small place in the corner of your yard that isn't used for anything. (Make sure the place is okay with your parents.) Now start collecting things that will rot and pile them up there.

- Start with some rough "brown" stuff that is high in carbon, such as twigs, corncobs, or crushed nutshells.
- On top of this, pile "green" stuff that is high in nitrogen. This would include hair from your hairbrush, grass clippings, dying houseplants or flowers, and kitchen scraps (such as onion skins, fruit cores and peels, lettuce leaves, and coffee grounds). Do *not* add meat, bones, dairy products, or fat (they break down slowly and will attract pests).
- Next, pile on more browns, such as dried leaves, pine needles, or shredded newspapers.

GOOD ROTTING STUFF

BROWNS	**GREENS**
Corncobs	Coffee grounds
Dried leaves	Crushed eggshells
Shredded newspapers	Fruit scraps
Crushed nutshells	Grass clippings
Pine needles	Hair
Sawdust	Tea bag contents
Straw	Vegetable scraps

- Add some garden soil and peat moss on top.
- Soak the pile with the hose.

In a week or two, get a garden fork and stir up your pile, turning it over to make a new pile. Soak it again, if it hasn't rained for several days. Every few days, add more greens, burying them deep in the pile. In a week or two, flip the pile back to the original spot. Keep doing that, and in a few months, you'll have compost!

(continued)

RED WIGGLERS RULE!

The fastest way to make compost is to get a couple thousand tiny redworms and let them chew through your leftovers. Redworms are similar to earthworms, except that they are smaller and live in manure (really!), rotting leaves, and compost piles.

This kind of composting is called **vermicomposting.** You buy the worms by the pound, or about 2,000 of them at a time.

GO WORM SHOPPING

You can learn more about vermicomposting by searching the Internet. Just search for **vermiculture, vermicomposting,** or **red wigglers.** Some sites sell starter kits or show plans for making bins, and most of them sell worms by the pound.

Here's how to compost with worms

To compost with redworms at home, you need a plastic bin with air and drainage holes, and a tray to put underneath to catch any moisture. Put the bin in a place that is not too hot or too cold—under the kitchen sink or in the basement. Line the bottom of the bin with a layer of peat moss or shredded newspaper. Next, put the worms into the bin. Finally, start feeding them. Put in kitchen scraps and garbage such as fruit and vegetable cores and peels, eggshells, stale bread, coffee grounds, and hair, but no bones or dairy products, which will stink up your bin. Toss in a little more peat moss or shredded newspaper, close the lid, and let the worms get to work.

Worms don't like light, so make sure that the lid is on tight. (You also don't want them to escape and wander around your house!) Each time you add more garbage, bury it in a different corner of the bin and put the cover back on tight.

A pound of worms will eat about three pounds of garbage in a week in an average-size bin. If they are happy and well fed, your redworms will live for about four years—continually multiplying as they produce new eggs every two to three weeks.

Before long, you'll have compost that's full of nutrients and worm poop, or castings. It won't stink and it will look like good, rich dirt. Mix it into your garden and watch your plants grow!

What's Big and Orange and Weighs 1,446 pounds?

A giant pumpkin! It's the biggest ever, and it was grown by a man named Alan Eaton, who lives in Richmond Hill, Ontario, in 2004. Giant pumpkins, called maximas, are the largest fruits in the plant kingdom, and growing them is a hobby for many people.

Not just any pumpkin seed will produce a giant pumpkin. Gardeners use special seeds, such as Dill's Atlantic Giant. These are named for Howard Dill, who lives in Windsor, Nova Scotia, and has been growing giant pumpkins since he was a boy in the 1940s. (Back then, a 100-pound pumpkin was considered gigantic.) Dill devoted his life to growing giant pumpkins and developing their giant seeds, which are as big as a farmer's thumbnail. His hard work paid off. He won the giant pumpkin world championship four times. In 1974, Dill patented his seeds. Now, gardeners from all over the world buy Dill's seeds and grow giant pumpkins in their own backyards.

Nobody in Europe had ever seen or heard of pumpkins until Christopher Columbus landed in North America in 1492, but Native Americans had been growing and using them for centuries. They snacked on pumpkin blossoms and dried seeds, and ate roasted pumpkin at mealtime. They dried strips of pumpkin and wove them into mats, and used hollowed-out pumpkins as bowls and storage jars.

When the Pilgrims arrived, Native Americans taught them about pumpkins, and that advice kept the Pilgrims from going hungry during winter. The first pumpkin "pie" was made for a Pilgrim feast in the 1620s, by cutting off the top, removing the seeds and fibers, and filling the pumpkin with milk. Then the pumpkin was roasted until the milk was absorbed.

A few years later, colonists in Connecticut found another use for hollowed-out pumpkins. They plunked them on men's heads and used them as guides for cutting hair in an even circle. That's how New Englanders got the nickname "pumpkin heads."

Today, almost all of the pumpkins grown are used for Halloween jack-o'-lanterns. The carving custom came to America with Irish immigrants as their way of marking the end of the Celtic calendar. The Irish were used to hollowing out and carving faces on turnips, but they found pumpkins bigger and easier to carve.

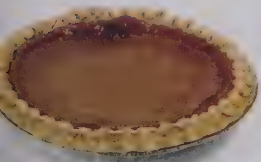
ORANGE YOU GLAD YOU KNOW . . .

Pumpkins are actually fruits, not vegetables.

It takes pumpkins about 120 days to mature on the vine.

Pumpkins are 90 percent water.

Pumpkins were once used for removing freckles and curing snakebites.



In colonial America, pumpkins were such a regular part of the diet that they inspired this poem:

For pottage and puddings and custard and pies,
Our pumpkins and parsnip are common supplies;
We have pumpkins at morning and pumpkins at noon,
If it were not for pumpkins, we should be undoon.

Spotlight on Spuds

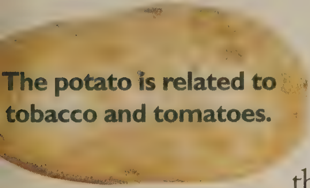
Potatoes are the world's fourth most-important crop—after wheat, rice, and corn. If you're like most people in North America, you eat about 140 pounds of potatoes every year. How much do you really know about them?

The Incas of Peru started cultivating nut-size potatoes around 200 B.C. The Incas liked potatoes so much that they worshiped them and were even buried with them! In the 1500s, Spaniards invaded Peru and took two potato plants home with them. From there, potatoes were carried throughout Europe. At first, people thought potatoes were poisonous. (They are related to deadly nightshade plants.)

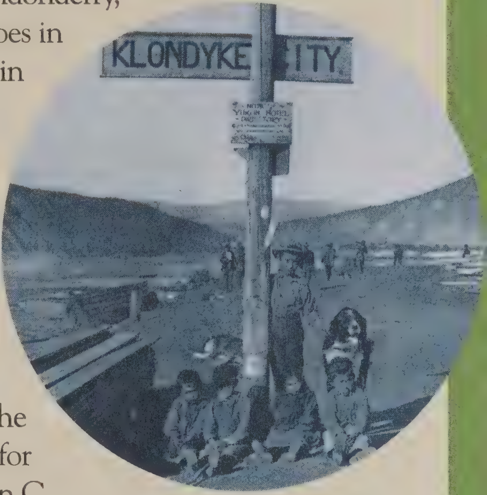
Mr. Potato Head was born in 1952 and was the first toy ever advertised on TV.

French fries were introduced to America when Thomas Jefferson served them at the White House.

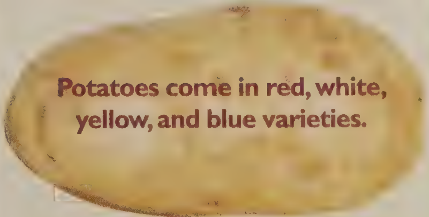
No one knows exactly when and how potatoes came to North America, but eventually potato patches sprang up all over. Settlers in Londonderry, New Hampshire, planted the first potatoes in North America in 1719. While Benjamin Franklin was ambassador to France, he attended a fancy dinner where potatoes were served 20 different ways—and he loved them all. During the Alaskan Klondike gold rush in the 1800s, miners traded their gold nuggets for potatoes because they are rich in vitamin C.



The potato is related to tobacco and tomatoes.



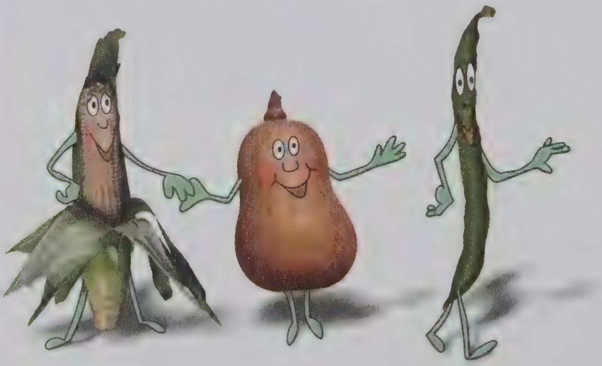
Potatoes are one of our most nutritious foods. One medium-size spud has only 100 calories and 26 grams of carbohydrate (less than in an equal amount of rice or noodles), more potassium than a banana, and lots of iron and fiber. Best of all, a potato is naturally fat-free.



Potatoes come in red, white, yellow, and blue varieties.

How Does Your

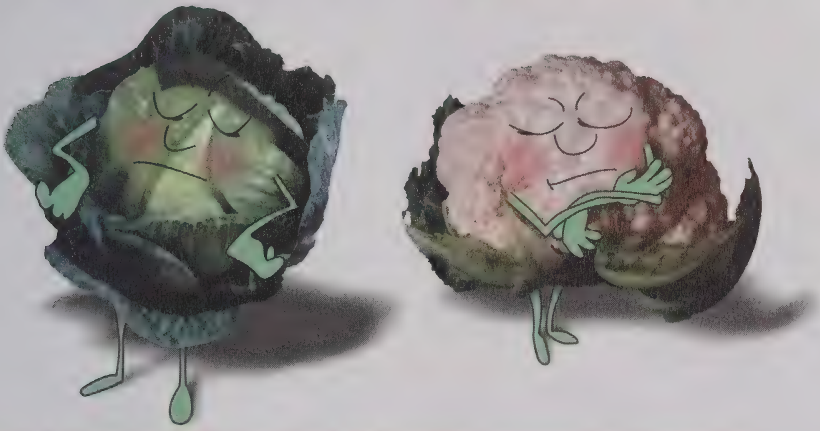
Do you know that plants need more than good soil, sunlight, and water to grow big and healthy? Like all living things, plants need friends. Native Americans knew this for centuries, and they knew that three of the best garden friends are corn, beans, and pumpkin (or squash)—a trio known as "the three sisters." These plants always grow much better together than if they are planted separately. Here's why: Each sister plant helps the others. The cornstalks support the beans. The beans provide nitrogen to the pumpkin and corn. The pumpkin's leaves shade the soil and keep weeds out. Finally, when we eat them together, corn, beans, and pumpkin provide a balanced diet. They are friends to the end!



Lots of plants get along like the three sisters. Knowing which plants are friendly (and which are not) will help your garden grow. Garlic drives away aphids and spider mites. Mint protects plants from ants, cabbage moths, and aphids. Marigolds prevent rabbits from eating lettuce and keep insects away from strawberries, potatoes, and tomatoes.

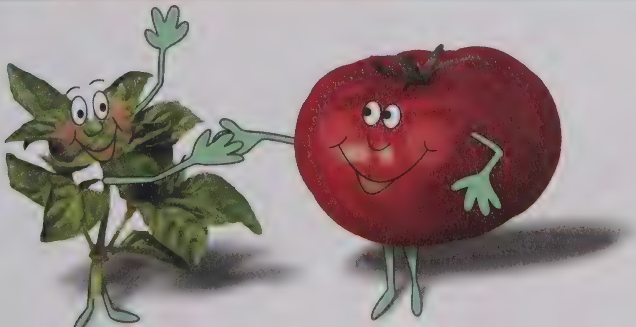
Some plants just won't grow together—and there's nothing you can do about it. Beans and peas don't like to be near garlic or onions. Potatoes and beans are unhappy around sunflowers, and even though cabbage and cauliflowers are plant cousins, they don't get along in a garden.

Garden Grow?

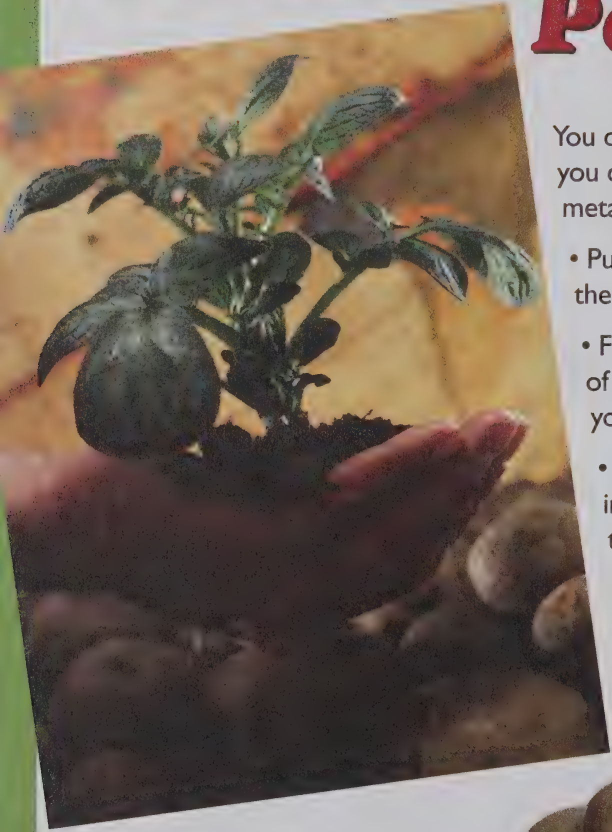


Here's a chart to help you find the perfect companion plants for your garden.

Plant	**Likes**	**Dislikes**
Beans	carrots, corn, cucumbers, potatoes, pumpkins, tomatoes	garlic, onions, sunflowers
Carrots	beans, onions, tomatoes	dill, parsley
Corn	beans, cucumbers, peas, potatoes, pumpkins, sunflowers	tomatoes
Tomatoes	basil, beans, carrots, dill, marigolds, onions, parsley	cabbage, cauliflower
Sunflowers	corn, cucumbers	beans, potatoes



Grow Trash-Can Potatoes



You don't need a field or a farm—you can grow tasty tubers in a clean metal or plastic trash can!

- Punch a few drainage holes in the bottom of a trash can.
- Fill the can with about 6 inches of garden soil (and compost, if you have some).
- Cut a couple of potatoes into chunks with one or two eyes each (or get some seed potatoes).
- Put the potato pieces into the can and cover them with about 3 inches of soil.

When the plants are about 7 inches tall, add more soil. Continue adding soil as they grow, until you fill the trash can.

Potatoes need lots of water. Keep the soil moist from the time the plants appear until they bloom. About three weeks after the first flowers appear, check your crop for new potatoes (they'll be in the soil). For larger potatoes, wait until the leaves wilt and die. Then, turn your trash can on its side and shake out your crop!

Plant a Vegetable Garden

When you are ready to find out how yummy homegrown veggies taste, use this plan and you'll get great results. Start with a plot that is about 10x16 feet. Plant 11 rows, each 10 feet long, 6 inches apart. Run the rows from north to south to get the best exposure to the Sun.

Row	Plant	Row	Plant
1	Zucchini (4 plants)	7	Beets
2	Tomatoes (5 plants, staked)	8	Carrots
3	Peppers (6 plants)	9	Chard
4	Cabbage	10	Radishes
5	Bush beans	11	Marigolds (to discourage rabbits!)
6	Lettuce		

A plot this size, planted this way, will feed a family of four. You might even have some vegetables left over for friends or the local food pantry.

Gardening Tips

Plant these flowers to attract butterflies:

- Aster
- Butterfly bush
- Hollyhock
- Lilac
- Pansy
- Coneflower
- Shasta daisy
- Snapdragon
- Sweet alyssum
- Zinnia

Plant red and orange shades of these flowers to attract hummingbirds:

- Butterfly bush
- Catmint
- Columbine
- Coral bells
- Daylily
- Larkspur
- Lily
- Petunia
- Scarlet sage
- Trumpet honeysuckle

History

Giants Among Men
- an elephant comes to New York City 78

Together Forever: The Strange Lives of Chang and Eng Bunker
- Siamese twins 80

Annie's Great Birthday Adventure
- over Niagara Falls in a barrel 82

Across the Continent in 90 Days—or Less
- America's first automobile odyssey 84

The Facts (and Some Fiction) About Death Valley
- "true or false" tidbits 86

Riding the Rapids
- John Wesley Powell explores the Colorado River 88

ANNIE EDSON TAYLOR
HEROINE OF NIAGARA

Giants Among Men

The first and second elephants in North America (in case you're counting).

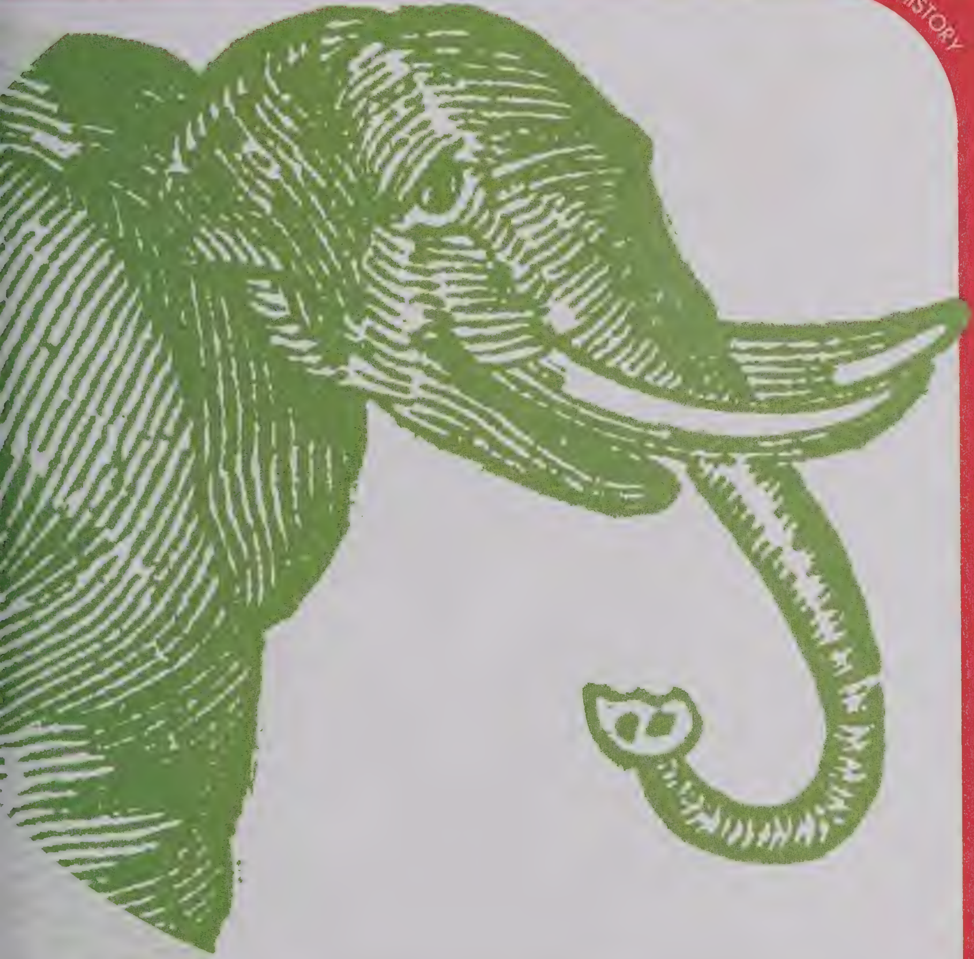
The first elephant to come to North America arrived in New York City in 1796, aboard the sailing ship *America*. The Crowninshield Elephant, named after the ship's captain, was a two-year-old from India. She was hoisted by pulleys and ropes and lowered onto the dock, like cargo. In those days, few people had ever seen a picture of an elephant, let alone the real thing, so for some years after she arrived, the Crowninshield Elephant was on exhibit.

Elephant number two, named Old Bet, arrived in Boston in 1804. It is believed that about a year later, a fellow by the name of Hachaliah Bailey bought her. Bailey, a farmer in Somers, New York, planned to have the elephant help him with heavy farm chores. But so many people came to gawk at Old Bet that Bailey decided instead to lock her in his barn and charge "one-eighth of a dollar" to see her.

Word about Old Bet spread like wildfire and Bailey decided to take her on tour. The pair visited communities throughout the northeastern United States, attracting large crowds whenever they stopped. They always traveled at night, with Old Bet lumbering behind the wagon, so that no one could get a free peek at her.

ELEPHANT HOTEL

Some people thought that Bailey's traveling show was a waste of time. One, a man named Davis, believed it was a sin for people to spend money on the "foolishness" of seeing an elephant. Determined to put an end to it, he shot Old Bet, killing her, in Alfred, Maine, in 1816.



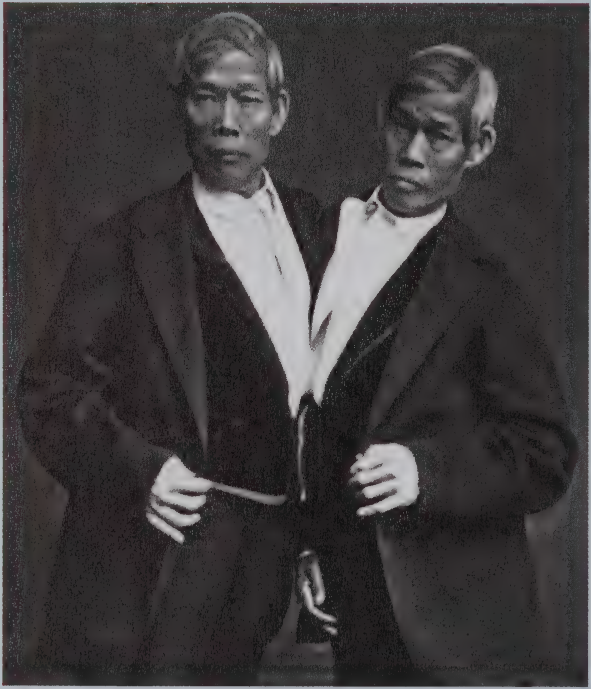
In tribute to Old Bet and two other elephants he acquired later, Bailey built the Elephant Hotel, which still stands in Somers today. A statue of an elephant stands there, too, on a pedestal out front. Also, in Alfred, Maine, there is a memorial plaque to Old Bet, noting the spot where she died.

How the Circus Came to Be

The success of Hachaliah Bailey's traveling show inspired other people to import and exhibit exotic animals. At about the same time, traveling shows featuring performers, games of chance, and other attractions were gaining popularity. During the 1830s, the two forms of entertainment gradually merged into what we now know as a traveling circus, with exotic animals and vaudeville-style entertainers. Today, Bailey's hometown of Somers is known as the "Cradle of the American Circus."

Together

The Strange Lives of



In early 1811, in the Kingdom of Siam (now Thailand), two little boys entered the world. They were so unusual that people were terrified of them, and the king of Siam ordered them to be killed. The babies were joined at the chest by a 3-inch band of tough skin. Luckily for them, their mother refused to abandon them and the king didn't carry out the death sentence.

To everyone's amazement, Chang and Eng *(left, above)*, the "Siamese twins," as they were called, learned to run and play and swim. All their physical activity stretched the band that joined the brothers to 5½ inches, which meant that they could stand side by side instead of face to face.

Forever

Chang and Eng Bunker

When they were 14, Chang and Eng were "discovered" by a British merchant named Robert Hunter. He convinced their mother that the boys could make a fortune if they left Siam with him. In 1829, Hunter paid their mother $500 of the $3,000 he had promised her, and he and an American partner took the boys on the road. They toured the theaters and concert halls of America and England for several years. The twins were put on show for four hours every day, with little chance for rest. When Chang and Eng turned 21, they took control of their own lives.

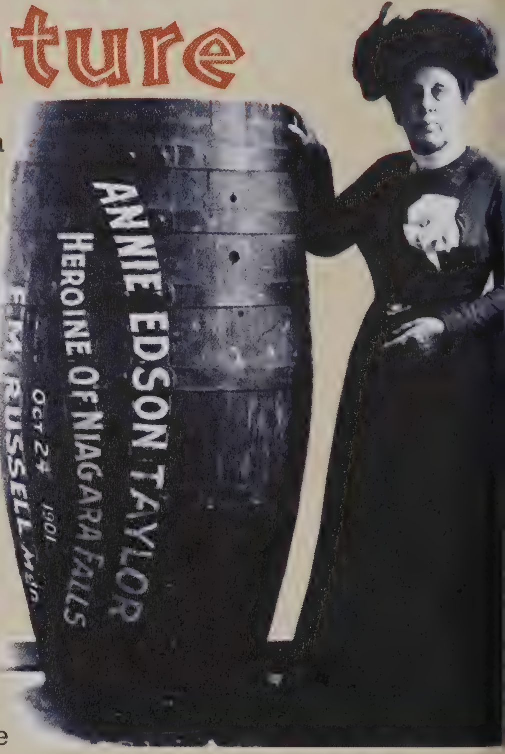
They continued touring for seven years, until they met a doctor from Wilkesboro, North Carolina, who persuaded them to take a vacation in his hometown. Chang and Eng liked the town so much that they decided to settle there. The two became U.S. citizens, taking the surname Bunker.

In Wilkesboro, Chang fell in love with 17-year-old Addie Yates. Eng was interested in her 18-year-old sister, Sallie, but Sallie wasn't interested in him—at first. Before long, each couple agreed to marry, but the girls' parents protested so much that Chang and Eng considered surgery to separate themselves. Finally the Yates parents agreed to the wedding and the foursome moved into the house the twins had built. Chang and Addie eventually had 10 children; Eng and Sallie had 11.

In later years, the twins toured again in Britain and Europe. Unfortunately, on a trip home to America, Chang had a stroke that partly paralyzed his right side. His health went downhill. Four years after the stroke, he died in his bed. When Eng awoke and saw his lifeless brother beside him, he cried, "Then I am going!" Doctors said that Eng simply died of shock.

Their strange lives ended as they had begun—together.

Annie's Great Birthday Adventure



Annie Edson Taylor was a 63-year-old schoolteacher who decided to celebrate her birthday on October 24, 1901, by going over Niagara Falls in a barrel!

Many people before her had done daring things at the Falls. A Frenchman called The Great Blondin had crossed the gorge on a tightrope. Others had barreled down the Whirlpool Rapids below the Falls. But no one had ever gone *over* the Falls.

Annie designed a 4½-foot barrel made of white Kentucky oak and banded with 10 hoops. She attached cloth straps inside and stuffed the barrel with pillows. A heavy iron weight was bolted to the bottom of the barrel to keep it upright as much as possible.

On her birthday, river men rowed Annie to an island near the shore and put the barrel into the water. Annie took off her hat, her coat, and her overskirt, and climbed in. The lid was screwed down and fresh air was forced into the barrel with a bicycle pump. The men towed the whole contraption to a point where the current would carry it over the Horseshoe Falls on the Canadian side. At 4:05 p.m., they cut it loose.

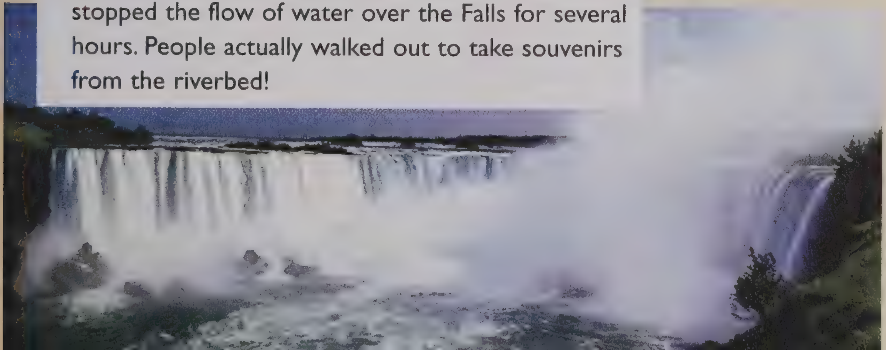
Annie, after she went over the Falls.

Annie later wrote: "I was started on a trip no traveler had ever taken, my heart swelled, and for some moments, I felt as though I were being suffocated, but I determined to be brave. . . . The trip through the Rapids was nothing but a pleasant sensation. . . . As I reached the brink, the barrel did what I predicted it would do, paused for a moment and then made the awful plunge of 158 feet to the boiling cauldron below. . . . The feeling was one of absolute horror."

Thousands watched as Annie's barrel shot over the Falls and whirled in the lower river. When it finally bobbed close to shore, it was hauled up onto the rocks. Annie was helped from the barrel. She was bruised, dazed, and freezing, but otherwise uninjured. She was an overnight sensation—the first person ever to conquer Niagara Falls!

Mind-Boggling Facts About Niagara Falls

- Approximately 600,000 gallons of water goes over the Horseshoe Falls every second.
- Niagara Falls is the second-largest waterfall on Earth. The largest is Victoria Falls in southern Africa.
- One-fifth of the entire world's fresh water is in the four Upper Great Lakes, and most of it flows over Niagara Falls.
- In the winter of 1848, an ice jam in the upper river stopped the flow of water over the Falls for several hours. People actually walked out to take souvenirs from the riverbed!



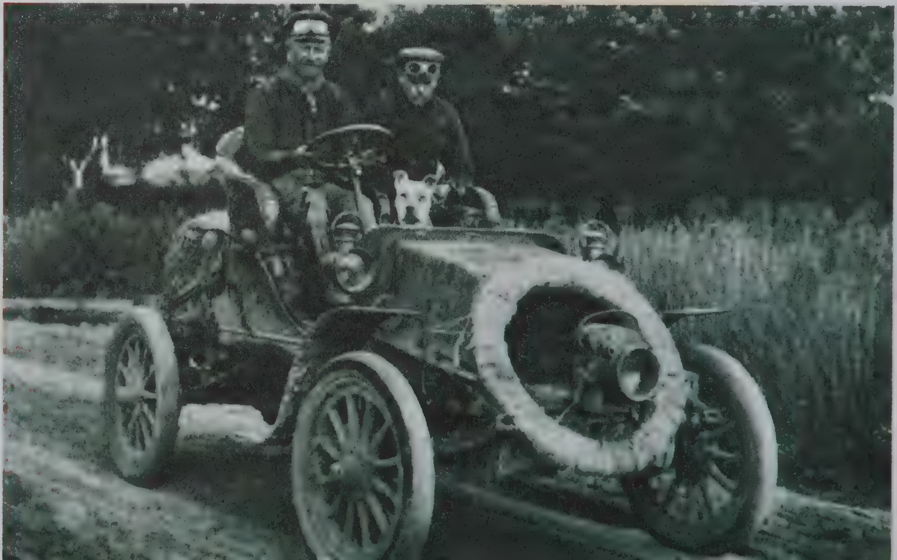
Take a Tour!
You'll find lots more fascinating facts, amazing stories, and fun activities at Almanac4kids.com. Check it out!

Across the Continent in

In 1903 Dr. Horatio Nelson Jackson, a 31-year-old doctor from Vermont, was relaxing at the exclusive University Club in San Francisco. He was discussing the automobile, "the newfangled horseless carriage," with some members of the club.

Most people thought that the automobile was just a fad with no future, but Jackson had a passion for the new invention. When someone said he would bet $50 that a car could never be driven from San Francisco to New York in less than 90 days, Jackson jumped at the bait and took the bet.

He bought a slightly used Winton touring car for $3,000 and hired a young mechanic, Sewall Crocker, to accompany him. They removed the backseat and loaded up with sleeping bags, cooking gear, tools, a block and tackle and rope, a shotgun, a rifle, a pistol, ammunition, and a large can for emergency gasoline.



AUTOMOBILES

90 Days—or Less

The men set out in the open car, which they called the *Vermont*. The car was capable of going 30 miles per hour, and the men made good time at first. Detouring around the Nevada deserts, they headed toward southeastern Oregon—1,000 miles out of their way. The tires were shredded by the mountain roads and their batteries failed. The men had to wait while parts were shipped by stagecoach from San Francisco.

The *Vermont* was the first car to be seen in many parts of the West. Crowds gathered to see what one local newspaper called "one of the wonders of the century." Schools were let out and ranch wives traded home-cooked meals for rides in the automobile.

In Idaho, they picked up a new member of the crew—a small dog they named Bud. He sat in front, wearing goggles, and braced himself for every bump and turn in the rough roads. Many roads were just trails, where covered wagons had rattled along. The men got lost in Wyoming and went without food for 36 hours until a lonely shepherd fed them and pointed them in the right direction.

On a last push, they drove 230 miles without stopping and reached New York City exactly 63½ days after leaving San Francisco. So, Dr. Horatio Nelson Jackson certainly won his $50 bet—and it cost him only $8,000 to do it! He didn't ever bother to collect the $50. There was something else just as funny: Shortly after arriving in his hometown in Vermont, Dr. Jackson was arrested and fined $5 plus court costs for driving at more than 6 miles per hour.

The Facts (and Some Fiction) About Death Valley

In 1894, a reporter for a New York newspaper wrote this about the desert called Death Valley, lying in California and Nevada: "This is the dominion of death. It is forever destined to stay in its state of primitive desolation and barrenness. . . . It will ever be avoided alike by man and beast."

Well, he got that wrong. Today the 150-mile-long basin, surrounded on all sides by steep mountains, is a national park. Each year, more than half a million people come to see its strange and beautiful landscape, spectacular spring wildflowers, and ghost towns.

True or False?

Death Valley is the hottest spot in the United States.

True. The temperature at Greenland Ranch in Death Valley reached 134°F (56.6°C) in July 1913. The average Death Valley temperature in July is 116°F (46.6°C).

Death Valley is the driest place in the United States.

True. The average annual rainfall is only 1.6 inches—the lowest in the Western Hemisphere. The most rain this desert has ever received is 4.6 inches per year. Some years, there is no rain at all.

Death Valley has never had a flood.

False. Despite the dryness, roads in the valley are closed due to flooding several times each year. Rain from the surrounding mountains rushes down the arid slopes, carrying rocks and boulders as it goes.

Heat stroke is the leading cause of death in Death Valley.

False. Dehydration is the biggest danger. Your body actually cools down as your sweat evaporates, but the danger is in losing too much liquid. On a hot summer day in the valley, you can lose more than 2 gallons of water just sitting in the shade. Trekking in the sun, you might lose twice as much. Without enough to drink, the blood thickens. This makes the tongue swell, causes delirium, and can lead to death.

Death Valley is the lowest point in the United States.

True. Badwater Basin *(opposite)* is the lowest spot in the Western Hemisphere, at 282 feet below sea level. The lowest place on Earth is the Dead Sea, which lies between Israel and Jordan. Its surface is 1,300 feet below sea level.

The valley got its name because people died there.

True. Pioneer wagons carried settlers into the valley in 1849. They were on their way to California to join the gold rush. One group became lost, and when they were eventually rescued—26 days later—one man had died. As the others were led out of the valley, they looked back from the mountaintops and, recalling their hardship, cried, "Good-bye, Death Valley!"

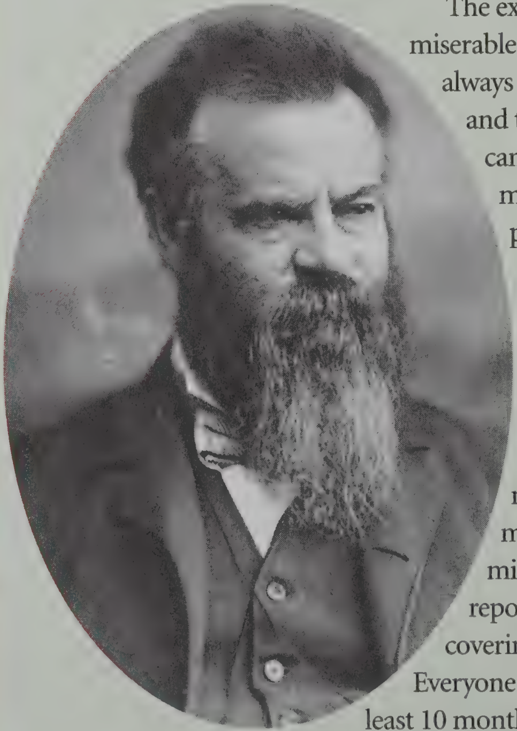
See page 177 for a metric conversion chart.

Riding the Rapids

The Colorado River's First Explorer

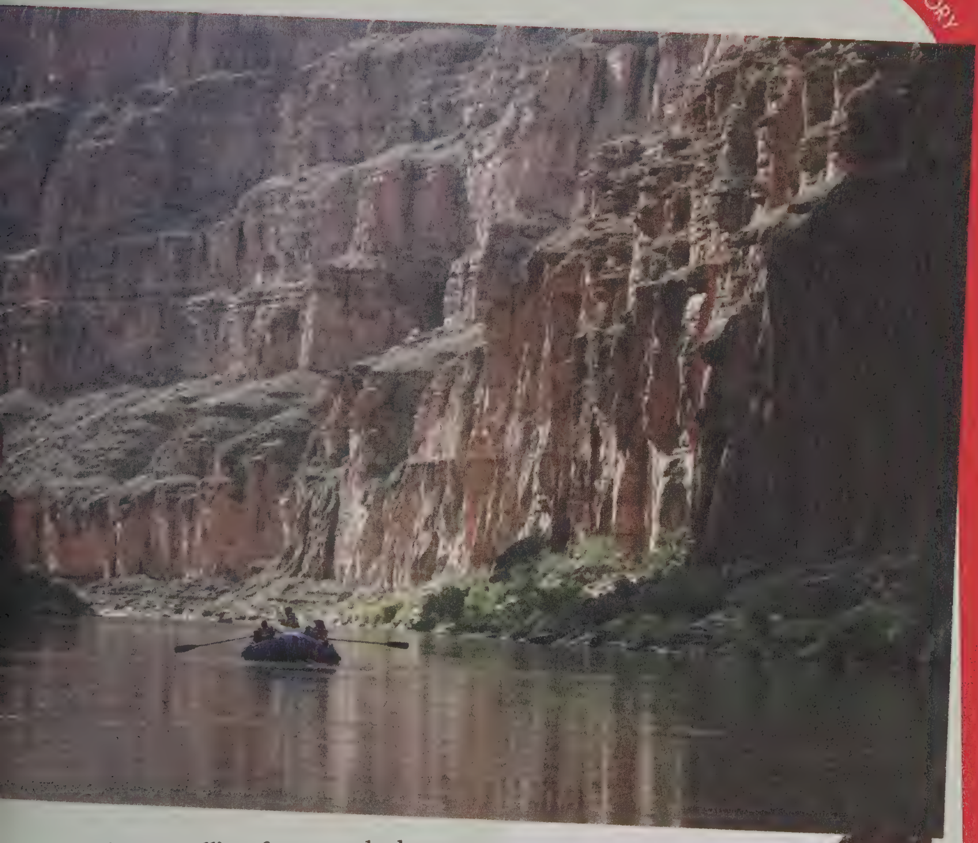
In 1867, a 33-year-old Civil War veteran named John Wesley Powell decided that he would explore the Colorado River, the only uncharted territory left in the continental United States. The exploration would take him through a large canyon that lay beyond the Rocky Mountains to the west—what we now know as the Grand Canyon in Arizona.

Somehow, Powell managed to convince friends and relatives to risk their lives to go with him on this adventure. No one knew what to expect on this trip or even where it would take them. Poorly prepared with wooden boats and basic equipment, Powell and his crew of nine men set off in 1869.

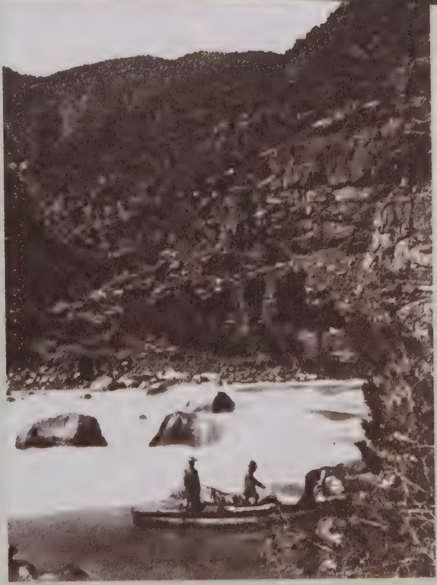


The explorers were miserable. Everything was always wet from the rain and the rapids, and the high sides of the canyon felt like prison walls. One member of the trip predicted that people would not want to visit this area because there was nothing good to say about it.

Each day brought a new set of challenges, from near-drownings and starvation to attacks by Native Americans. There were many newspaper reports claiming that members of the expedition were missing or dead. Contrary to these reports, the crew completed the trip, covering 900 miles in just 69 days! Everyone had expected the trip to take at least 10 months.



After Powell's safe return, he became a national hero. Through his many interviews and lectures, he helped to introduce American audiences to the Grand Canyon. But Powell's scientific curiosity wouldn't allow him to stop exploring. In 1871, he went on another trip down the river to the Grand Canyon. His purpose was to map out the area, collect specimens to study, and research the lives of Native Americans. This time, it took Powell longer than a year to finish his adventure. When he returned, in 1872, he became famous as the first non-Native expert on one of the wildest and most beautiful areas of the United States.



(continued)

Unbelievable But True Facts About Powell and His Adventures

- Powell had no right arm. He lost it on the battlefield during the Civil War. A Native American tribe—the Paiutes—called Powell *Kapurats*, which means "he who is missing an arm."

- **Powell liked to sing. When he was worried about dangerous river conditions, such as rapids, he would sing lively songs. For quieter moments, he preferred the calming music of hymns and operas.**

OUR FIRST CAMP

- On the first trip, the crew came upon two sets of mighty rapids, followed by a large, sharp rock cutting across the current. Weary and fearful, three men decided to turn back. Powell and the rest ultimately conquered the watercourse, but the three who quit never made it home.

- **On the second trip, Powell nearly drowned. A large wave flipped his boat upside down, sending him and another man into a whirlpool. Miraculously, the two were shot out of the eddy and ended up in the water beside the rest of the crew.**

- Years later, Powell made a bet with a friend that Powell's brain was larger. Autopsies eventually showed that Powell was the "winner."

- **When Powell and his crew traveled down the Colorado River in crude, wooden boats, it took them 69 days. Today, motorized, neoprene rafts make the same journey in six to eight days.**

Nature and Outdoors

A-Fishing We Will Go
- fishing tips 92

Incredible Eating Machines
- earthworms 94

Fruit Flies, Don't Bother Me!
- fruit flies 96

Home Alone? Not Likely!
- dust mites, spiders, crickets 98

A Bird in the Hand . . .
- taming wild birds 100

Hypnotize a Frog, Fascinate Your Friends!
- cool tricks 102

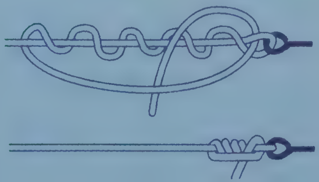
Catching Some ZZzzzzs
- surprising facts about animal sleep 104

Making Tracks
- tracking wild animals 106

A Nifty Knot

Need to get a hook or a swivel on that slippery fishing line? The clinch knot is just about the easiest knot to use, and it works very well.

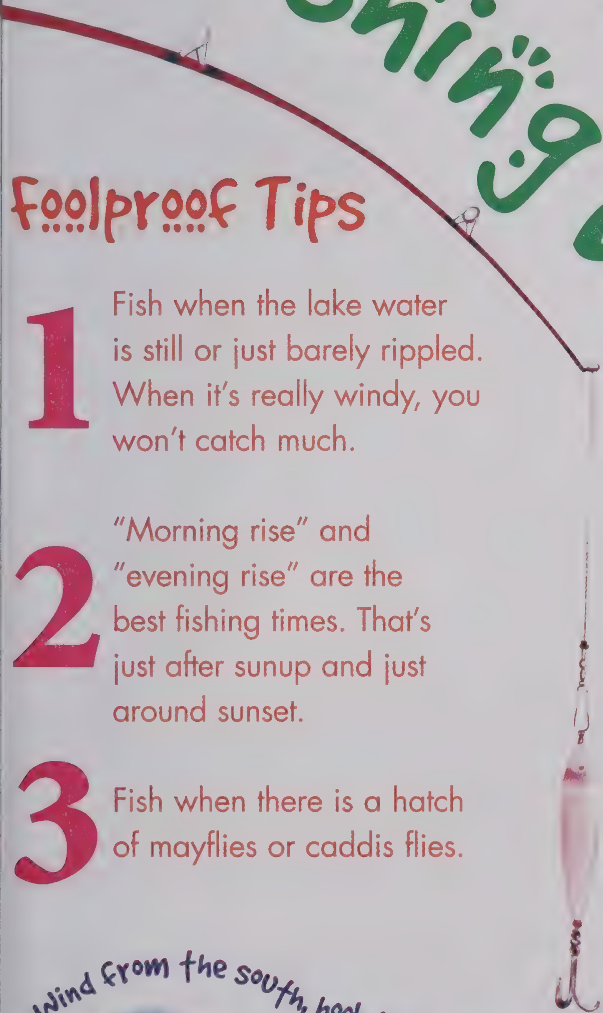
Put the line through the eye of the hook or swivel. Pull through quite a bit of line and double back. Turn the end around the line five times. Then pass the end of the line through the first loop—the one closest to the eye. Now put the end through the large loop that was made when your line went through the first loop. Pull the end of the line firmly and slide the coils down tight against the eye. Trim off the end if it's really long. You're all set!



Did You Know?

- **Fish swim** by expanding the muscles on one side of the body while relaxing the muscles on the other side. This moves the tail back and forth, which moves the fish forward.
- **Fish hear** by picking up vibrations in the water through a line of hair cells along each side of the body.
- **Fish taste** things with taste buds, just like humans. Some of their taste buds are on the outside of the body. They can taste salty, sweet, sour, and bitter flavors.

A-fishing We Will Go



Foolproof Tips

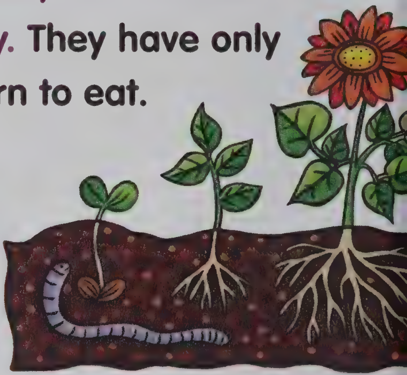
1 Fish when the lake water is still or just barely rippled. When it's really windy, you won't catch much.

2 "Morning rise" and "evening rise" are the best fishing times. That's just after sunup and just around sunset.

3 Fish when there is a hatch of mayflies or caddis flies.

Wind from the south, hook in the mouth. Wind from the east,
bite the least. Wind from the north, further off.
Wind from the west, bite the best.

They have no eyes, no true brain, and no real heart, and they're kind of slimy. They have only one purpose in life: They're born to eat.



Incredible Eating Machines

Long before man invented the plow, earthworms were eating dirt, digesting it, and turning it into worm waste that is actually rich agricultural fertilizer. Most worms eat their own weight in food each day. What comes out is called **castings.**

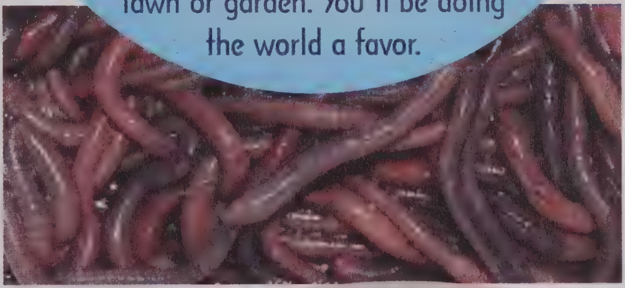
Scientists think there may be as many as 5,000 different kinds of earthworms chewing their way through the ground. They eat almost everything in their path—leaves, twigs, dead roots, soil, and mineral particles.

Did You Know?

- Healthy agricultural soil could have as many as three million worms per acre.
- People who raise worms as a business are called **vermiculturists.**

Save the Worms!

Left on their own, earthworms are capable of living up to 10 years. But sudden changes in soil temperature and some chemicals used in agriculture can kill them. Of course, they also have to watch out for birds, moles, snakes, and toads. Pretty hard to do when you have no eyes! Luckily, worms can feel the slightest movement in the soil around them. That helps. The next time you come across a worm stranded on a sidewalk, pick it up gently and return it to the lawn or garden. You´ll be doing the world a favor.



- Earthworms are used as a protein booster in pet food and animal feed. Dried worm meal has even been made into survival food for humans.
- Every earthworm is a hermaphrodite—this means it's both male and female! They can mate with each other or produce offspring all by themselves, which is a great way to make sure we never run out of worms.

Fruit Flies,

Reach for a peach and what happens? A squadron of fruit flies takes to the air above the fruit bowl! You've disturbed the pesky creatures as they slurp away with their sponging, sopping mouthparts at what you thought was *your* fruit. Where the heck did they come from?

They probably didn't come from the grocery store. It's more likely that the flies were passing by your house and smelled the fruit as it was ripening, especially if it was starting to get a bit overripe. (Fruit flies actually prefer wine and beer to fruit because they like food that has fermented.)

Where It's Wet and Smelly . . .

The tiny, yellowish insects are part of a large family of small flies that has about 3,000 species. Unlike houseflies, which can spread disease, fruit flies are harmless. They can live and breed in drains and garbage cans and on damp mops and rags. Spilled juice under the refrigerator or a rotten potato at the bottom of a bin can be a happy home for the fruit fly.

The Latin name for fruit fly is *Drosophila melanogaster.* Try to say that five times, fast!

Don't Bother Me!

They Lay Hundreds of Eggs . . .

Fruit flies lay their eggs near the surface of your ripe fruit—and they can lay 500 eggs at a time! About 30 hours later, tiny larvae emerge and feed on the fruit. In a week they are ready to take to the air.

But They Don't Live Long!

The entire life span of a fruit fly is only about two weeks. However, researchers have discovered that drinking a fermented beverage will enable a fruit fly to live a day or two longer than those that don't—and a day or two is quite a bit when your life is only two weeks.

Tricking Tiny Brains

Fruit flies have small brains that are easy to trick. If you want to lure them away from your fruit bowl, just place a tiny bit of ripe banana or a splash of cider vinegar in the bottom of a bottle or jar. Roll up a piece of paper into a funnel and stick it in the neck of the container. In minutes you'll be trapping flies. You can release them outdoors or hand them the death sentence. The verdict is up to you.

> "Time flies like an arrow; fruit flies like a banana."
>
> —**Groucho Marx,**
> **American comedian (1870–1977)**

Home Alone? Not Likely!

You may think you know how many LIVING, BREATHING BODIES are in your house. YOUR FAMILY AND MAYBE A PET OR TWO, right? The truth is that your house is probably LOADED WITH CREATURES—some so small they can be seen only through a powerful microscope.

They're in Your Pillow!

Take dust mites, for instance. You can't see them, but they cozy up in bed with you every night. Scientists estimate that a typical mattress (unless it is brand new) could have 100,000 to 10 million mites inside it! What's more, almost 10 percent of the weight of your pillow could be mites—dead and alive—and their droppings.

How do you know they are there? Sneezing, itchiness, watery eyes, and wheezing are almost always caused by these uninvited guests.

When spiders unite, they can tie down a lion.

–Ethiopian proverb

Are Your Spidey Senses Tingling?

Hunter spiders don't spin webs, they just lurk under furniture and in cracks until something tasty passes by. Then they dart out and gobble. Jumper spiders have a more refined method. They stalk their prey on walls. When they get close to a bug, they hurl themselves into space while letting out a silky line. Then they haul the prey up the line and find a quiet hiding place to dine.

The house spider spins those webs you see hanging in the corners of rooms. Webs are a great way to trap flies and other insects, but the sticky threads also attract dust and dirt. Before long the web is gray and creepy-looking.

Explore More! You'll find lots more fascinating facts, amazing stories, and fun activities at Almanac4kids.com. Check it out!

Chirrrrrrp!

You'll certainly know when you are sharing your home with a cricket. Its nighttime chirping is the only clue you need! House crickets can't stand cold weather. They like temperatures between 80° and 85°F (26° to 29°C), so you will find them in the furnace room or the laundry room, or near the fireplace. Crickets don't bite and rarely carry disease.

In some cultures, crickets are considered good luck. The Chinese keep singing crickets in fancy cages. Crickets produce the "singing" sound by raising their front wings and rubbing them together.

Dark-eyed Junco

If you've ever had a parrot or a parakeet land on your hand, cock its head, and look you in the eye, you've experienced the thrill of nature up close. If you are patient, you can learn how to tame birds in the wild, too.

A Bird in the Hand . . .

How to Have Wild Birds Eating Out of Your Hand

step **1** Once you spot a bird, move very, very slowly, if at all. Try to see things from the bird's point of view. You are huge and you may be an enemy!

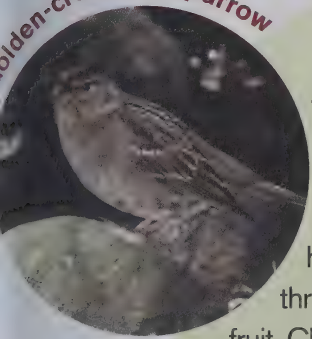
step **2** Start speaking to the bird in a calm voice. If you are close enough, watch the expression in the bird's tiny eyes. Is it afraid? Rapid movement of its stomach is another sign that the little creature is scared. If you notice this, stand still and wait.

Chickadee

Which Birds Are Easiest to Tame?

About half the chickadees you ever meet will eventually eat from your hand. Purple finches are a little harder to convince; about one-third of them will eventually get the hang of it. No matter how long you try, however, some birds may never want to trust a great, big, human being.

Purple Finch



olden-crowned Sparrow

Who Likes What?

Juncos prefer white millet, but they'll eat cracked corn, too. Sparrows munch sunflower seeds, especially hulled seeds. Hermit thrushes thrive on worms and fruit. Chickadees adore sunflower seeds. Purple finches go crazy for flax seeds. Robins like raisins and currants.

American Robin

step 3 You should have with you some of the food the bird likes. Put a little in your hand and hold it out. Remember, no quick movements. When the bird lands on your hand, try to hold your breath for a while and keep very still. Even swallowing might scare the bird away.

step 4 Don't ever try to close your hand around a wild bird. This will terrify the creature and it will struggle to get away, possibly hurting itself. If the bird wants to leave, let it go and put your seeds away for another day. Consider this a test of your dedication and patience. There's always tomorrow.

Hermit Thrush

Be the most popular kid on the block!

Hypnotize a Frog,

Before you assemble the audience, you might want to practice. There are two ways to hypnotize a frog. You'll have to decide which one works best for you.

Method 1

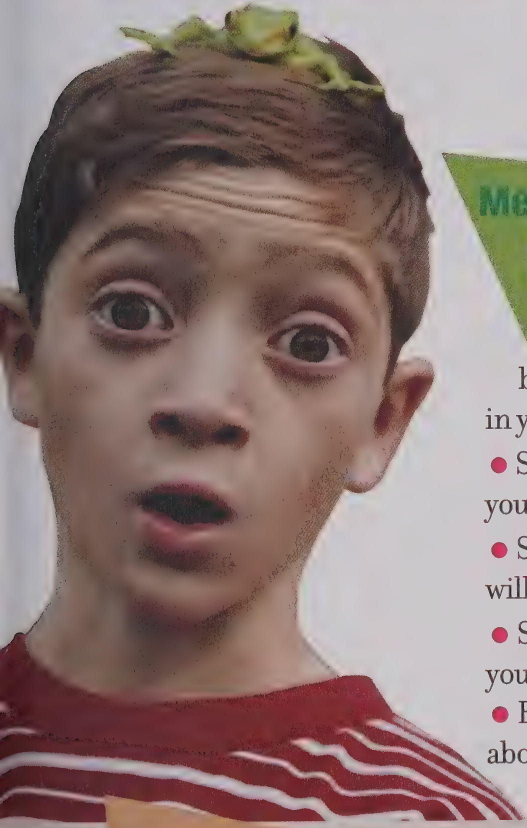
- Hold out your hand in front of the frog as if you were telling it to stop.
- Start making small circles with your outstretched hand.
- Move closer and closer to the frog until you are in its face.
- Crouch down slowly. Keep circling with your hand.
- Presto! The frog stays dead still and you pick it up with your free hand. Take a bow and wait for the applause.

How Does It Work?

No one knows why the hand circling works. Some say that since the frog's eyes can't rotate 360 degrees, it can't comprehend the whole movement and its brain gets so confused it just blanks out. More likely, it's so bored with all those circles it just zones out.

First you need two things: a frog and an audience.

Fascinate Your Friends!



Method 2

- Hold the frog gently, but firmly.
- Turn the frog over on its back and keep holding it firmly in your hands.
- Say a few magic words to make yourself look good.
- Slowly open your hands. The frog will remain motionless on its back.
- Stroke its belly like you know what you are doing and take all the credit!
- Be sure to turn the frog over after about a minute.

How Does It Work?

There is a more scientific reason why the second method works. Frogs (toads and lizards, too) have no diaphragms, so when they are on their backs, their lungs don't operate efficiently. To save oxygen, the animals go into a kind of trance.

Catching Some ZZZZZZ

Every living creature needs to sleep. Scientists think that sleep helps an animal's body recover from all the work it did when it was awake. Some animals sleep at night, while others sleep during the day.

Animals that aren't concerned with being hunted—lions, for instance—can sleep any time they want. Rabbits, on the other hand, have to watch out for danger all the time, so they take many short naps. The most expert napper of all is the ostrich. Ostriches never sleep for more than 15 minutes at a time!

Dozy Dolphins!

The dolphin's brain is divided into two halves, just like a human brain—but dolphins do something humans can't do. They put one side of the brain to sleep while the other stays awake. Then the other side takes a nap while the first side stays alert.

ZZZZZZZZZ

Wake Up!
You'll find lots more fascinating facts, amazing stories, and fun activities at Almanac4kids.com. Check it out!

Who Sleeps the Most?

Animal	Sleep time per day
Bat	20 hours
Python	18 hours
Tiger	16 hours
Squirrel	15 hours
Ferret	14 hours
Hamster	14 hours
Cat	12 hours
Dog	10 hours
Pig	8 hours
Cow	4 hours
Horse	3 hours

The Really Deep Sleepers

Ever feel like staying in bed for days and days? Some animals do. In winter, bears, squirrels, and groundhogs just curl up and sleep for weeks. They lower their body temperatures, slow down their hearts, and conk out, or hibernate. Groundhogs, for example, bring food into their underground burrows in the autumn, seal the openings to their tunnels, then lower their body temperatures from 98° to 38°F (36° to 3°C) and sleep until spring. Once in a while, they warm up a bit and eat a little of the stored food. Then it's back for more shut-eye. By the time they get up in spring, they have lost almost half their body weight!

Making Tracks

You don't have to be in the jungle or deep forest to become an expert animal tracker. Tracks can be as close as your backyard. Birds, reptiles, mammals—even insects—leave tracks that are clues to their behavior. Tracking will help you discover a world of animal activity.

Tracking is something that you learn by doing. Get out there and look—in the yard, vacant lots, parks, fields, and forests. Soft soil near ponds and streams holds lots of tracks and so does snow. Here are some tips to help you get started:

1 ***Get down and dirty!*** Study the ground closely. If you find something, get down on your hands and knees and study the shape of the track so you can recognize it when you try to follow it. If you can, make a sketch of the track. Note the size and whether the track shows claw marks.

2 ***Track early in the morning or late in the day.*** These are the times when shadows make the animal prints easier to see.

3 ***Look for other signs.*** Look for bent grass or broken branches that tell you which way the animal was moving. Also look for scratches or hairs where the animal might have rubbed against a rock or tree.

4 ***Watch for poop.*** Animal droppings, called **scat,** can tell you a lot. Break up some scat with a stick. Do you see berries, bits of leaves, and seeds? You're tracking a vegetarian. If there are pieces of bone, feathers, or fur in the droppings, you're on the trail of a meat eater. Also take notice of how the scat looks. If it is dry all the way through, you know the animal left it quite a while ago. If it is still moist inside, the animal may be close by.

5 ***Try to think like the animal if you can't see where the trail continues.*** Where would you go if you were the animal? Use a stick to mark the last track you found. Then start searching in a circle around the track until you pick up the trail again.

6 ***The most important tip of all.*** Don't get lost!

Beaver

Habitat: Wetlands with trees
Weight: Up to 60 pounds
Length: 25 to 31 inches; tail 12 to 16 inches
Diet: Tree bark, aquatic vegetation
Territory: North America, except for southern California, Florida, Nevada, and parts of Alaska

White-tailed Deer

Habitat: Forests, wetlands, orchards
Weight: 90 to 300 pounds
Height: 36 to 40 inches at shoulder
Diet: Grasses, twigs, leaves, nuts, berries, fruit
Territory: Continental United States, except the Southwest; southern Canada

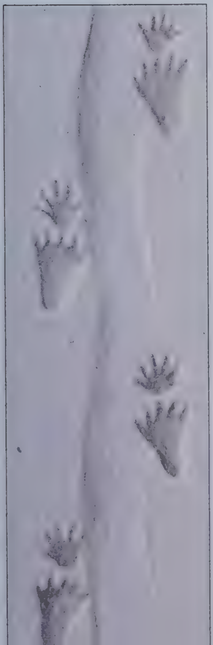
Red Fox

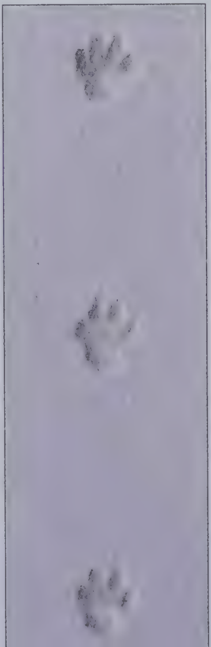
Habitat: Forests, fields
Weight: Males, 12 to 15 pounds; females, 10 to 12 pounds
Height: 14 to 16 inches at shoulder
Diet: Nuts, fruit, grain, insects, fish, eggs, small mammals, garbage
Territory: North America

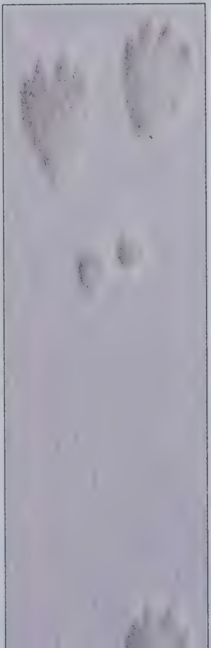
Snowshoe Hare

Habitat: Fields, riversides, swamps, forests
Weight: 2 to 4 pounds
Length: 15 to 20 inches
Diet: Grass, clover, dandelions, raspberry and blackberry shoots, twigs, woody plants
Territory: Northern United States; most of Canada

See page 177 for a metric conversion chart.







(continued)

Gray Wolf

Habitat: Forests, deserts, plains, mountains, tundra
Weight: 50 to 115 pounds
Height: 26 to 32 inches at shoulder
Diet: Grasses, nuts, berries, rodents, rabbits, deer, moose
Territory: Northern Michigan, Wisconsin, Minnesota, New Mexico, Arizona, northern U.S. Rockies, Alaska; Canada

Striped Skunk

Habitat: Woodlands, suburbs, grasslands, farmland
Weight: Males, 3 to 11 pounds; females, 2 to 8 pounds
Length: 21 to 26 inches
Diet: Mice, nuts, insects, fruit, garbage
Territory: United States, except the Southwest; Canada

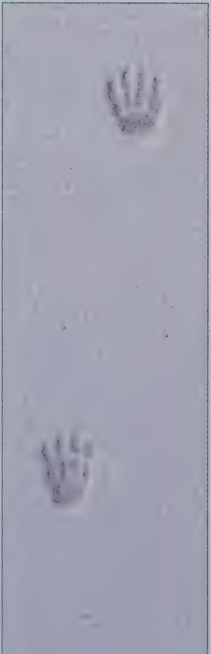
Moose

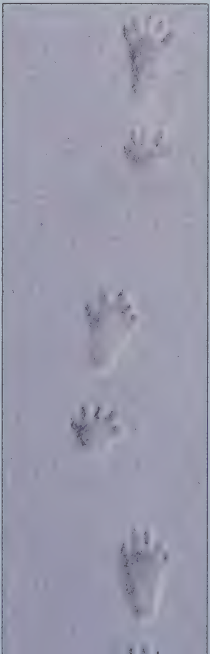
Habitat: Recently burned areas, forests, riversides
Weight: Males, 1,200 to 1,600 pounds; females, 800 to 1,300 pounds
Height: 70 to 76 inches at shoulder
Diet: Aquatic plants; willow, cottonwood, fir and other trees
Territory: Northern United States; Canada

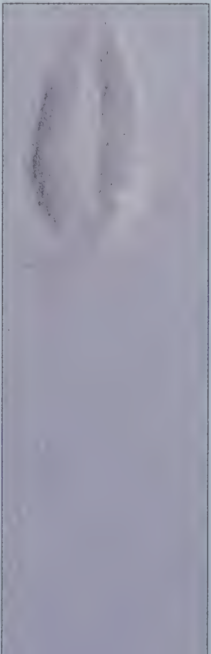
Black Bear

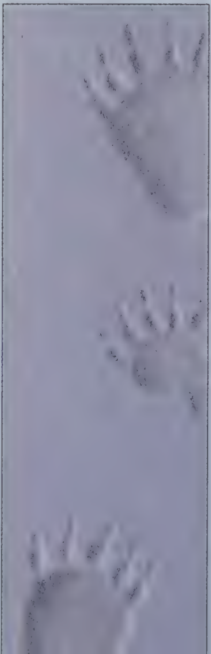
Habitat: Forests, wetlands
Weight: Males, 150 to 400 pounds; females, 90 to 200 pounds
Height: 36 to 48 inches at shoulder
Diet: Grasses, nuts, berries, fish, birds, small mammals
Territory: North America

See page 177 for a metric conversion chart.









Pets

Our Heroes
- pets protect humans 110

Jim, the Wonder Dog
- astounding supernatural powers 112

Rip Van Toadle
- buried alive for 31 years 114

Pigeon Power!
- the first mail carriers 116

So, You Think You Have a Winner?
- champion pets 118

Animal Trivia 122

Dogs, Our Best Friends
- dog behavior 124

Cats, the Purrrfect Companions
- cat facts 126

Make Your Own Pet Treats
- delicious recipes 128

Our Heroes

Some animals will go to extraordinary lengths to protect humans from danger.

Here are just a few of the amazing things animals have done.

Baby was a deaf little cat who had no voice. That didn't make any difference to the Beriault family. They took her in and loved her. Late one winter night, Baby somehow knew that Mr. Beriault was ill. Since she couldn't meow, she jumped up and down on Mrs. Beriault until she woke up. Mrs. Beriault rushed her husband to the hospital in time to save him from his almost-fatal heart attack.

Scooter, a 2-year-old German shepherd, showed her bravery by pulling her owner out of the freezing water of a river on their farm. Fred Priest was showing his new dog around the property when he fell through the ice. Scooter dug her claws into the ice and held fast while Fred used the dog's leash to drag himself out of the water.

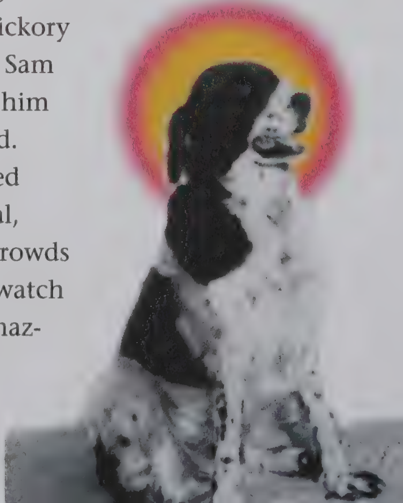
Indian Red, a Morgan/quarter horse cross, is the only horse in the Purina Animal Hall of Fame. Helen Bumby nursed Indian Red back to health after he had been neglected by his previous owner. One bitterly cold December day, Helen was riding him near his stable when he started to act strangely. He stopped and kept pawing the ground, whinnying and staring into a snowbank. Helen got off the horse and looked into the snowbank. To her shock, she found a 77-year-old woman almost buried in the deep snow. Luckily, the woman made a full recovery in the hospital. And Indian Red made it into the Animal Hall of Fame.

Priscilla the piglet was only two months old when she went to a lake in Texas with Carol Burk and her young son. Carol and Priscilla went swimming. Moments later, the son followed them into the water—and went under before Carol could get to him. She screamed at the little boy to hold on to Priscilla. Both the boy and the pig went under. Seconds later, Carol saw Priscilla's ears and nose come up. The little pig pulled the boy to shore and saved him from drowning. Priscilla was given the American Humane Society's award for heroism. No other pig can boast that honor.

Jim, the Wonder Dog

On an early spring day in 1925 in Louisiana, an ordinary hunting setter gave birth to a litter of seven pups. One of them, a little black and white male, grew up to astound the whole world with his supernatural powers.

Sam Van Arsdale, the man who bought the pup, named him Jim. One day, when Jim was about three years old, he and Sam were out hunting. Sam said, "Let's sit in the shade of that hickory tree and rest." Jim walked over to a hickory tree and sat down. Sam asked Jim to show him an oak tree. Jim did. Sam quickly realized that Jim was special, and, before long, crowds were gathering to watch Jim perform his amazing feats.



190-815
PITTSBURG IS BEARING UP
BANK CRASH IN NO WAY DEMORALIZES BUSINESS MEN.
Meanwhile, Harry B. Kumm

At one gathering, Sam called out a license plate number and Jim found the car with the correct license. Sam asked, "What would I do if I had a stomachache, Jim?" and Jim walked over to a man and nudged him. The man turned out to be a doctor.

Then someone in the crowd said something in French. Jim worked his way through the crowd and nosed the pocket of the town's Methodist minister. When Sam asked what the question had been, the Frenchman said, "I asked if there was a Bible in the crowd."

The minister looked shocked and pulled a Bible out of his pocket.

Sam wanted to know how Jim could do all this, so he took him to a university veterinary college to be tested. Jim was so famous by this time that a Hollywood film company came to record the event. The vets could find nothing physically unusual about Jim. But they said he had extraordinary powers that they had never seen before.

JIM THE WONDER DOG
1925 - 1937

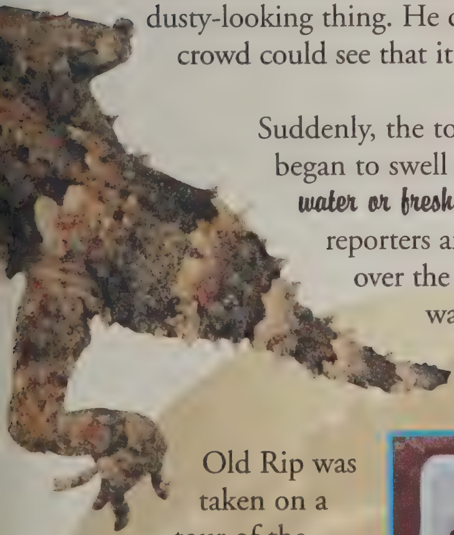
Over the years, Jim predicted who would win elections and which team would win the World Series. For seven years in a row, he picked the winner of the Kentucky Derby horse race. He could even predict whether an unborn baby would be a boy or a girl.

One day in 1937, when Jim was 12, he collapsed. Sam rushed him to a clinic, but Jim had breathed his last. He was buried in a special casket in the cemetery with all the Van Arsdale family members. People still visit Jim's grave in the Ridge Park Cemetery in Marshall, Missouri, and marvel at his special powers.

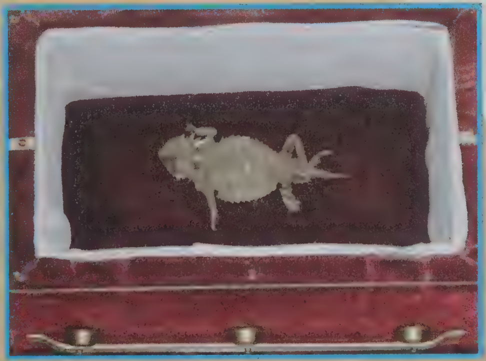
RIP VAN TOADLE

In 1897, the people of Eastland, Texas, were building a new courthouse. Everyone gathered for the ceremony to lay the cornerstone for the building. As usual, certain objects were placed inside the cornerstone to mark the occasion. One attendee, Ernest E. Wood, had come across a horned toad (actually a lizard) on his way to the festivities and slipped it into his pocket. When no one was looking, he put it into the cornerstone (not a nice thing to do). The little vault was sealed up and the construction was completed.

Thirty-one years later, the courthouse was being torn down so a bigger one could be built. A crowd of 2,000 gathered to watch as the old cornerstone was opened. A local judge reached in and pulled out a Bible and several other items. Next, the surprised judge lifted out a flat, dusty-looking thing. He dangled it by one hind leg so the crowd could see that it was a dead toad.



Suddenly, the toad shuddered a few times and began to swell up. **Thirty-one years without food or water or fresh air, and it was still alive!** Soon reporters and photographers sent the story all over the nation, and Old Rip, as the toad was christened, became famous.



Old Rip was taken on a tour of the United States. He even went to the White House to visit President Calvin Coolidge. The president canceled several other engagements just so he could meet the famous toad. Perhaps it was all too much for Old Rip. Just 11 months after being freed, he caught pneumonia and died.

Believe it or not, Old Rip was laid out in a local funeral parlor for several days so people could pay their respects. Then he was embalmed and placed in a plush-lined casket inside a glass-and-marble case in the lobby of Eastland's new courthouse. Old Rip may be dead, but the legend of the Texas toad lives on.

If you go to a city park, you will probably see hundreds of pigeons. Did you know that pigeons have played an important role in history?

Pigeon

Pigeons may not have large brains, but they can be trained to find their way back to their home coop. Once people discovered this, pigeons became the world's first mail carriers. Tiny messages are strapped to their legs. Once a bird is released, it heads for home, taking the message along for the ride. Ancient Romans used pigeons during chariot races to inform owners about how their chariots had finished.

Super Spies

In World War I, pigeons were an important part of each side's battle plans. The Germans even strapped tiny cameras to the bellies of their pigeons. Once the pigeons made it back to the German lines, the photos showed where enemy troops were positioned. France alone used 30,000 pigeons during the course of the war. They were so important that anyone caught interfering with their flights could be sentenced to death!

Cher Ami

Cher Ami (French for "Dear Friend") was one of 600 carrier pigeons used by American forces during World War I. At one point, a battalion of American soldiers came under accidental fire from another group of American soldiers. Cher Ami was the last pigeon the besieged soldiers had left. They sent him out, and even though he was shot and wounded by the enemy, he managed to deliver his message giving the soldiers' position. The men in the battalion were saved, but Cher Ami was gravely injured in the chest and leg. Army doctors were able to save his life—but not his leg. His fellow soldiers carved a little wooden leg for him, and he returned to the United States by boat.

Power!

Up until the time that the Internet and e-mail became so popular, pigeons were still being used in eastern India to link remote police stations. But for the most part, carrier pigeons, often called homing pigeons, are raised as pets and trained for competitions. The king of Saudi Arabia owns 150,000 carrier pigeons. Of course, he probably has a whole staff to clean the coops!

SO, YOU THINK YOU

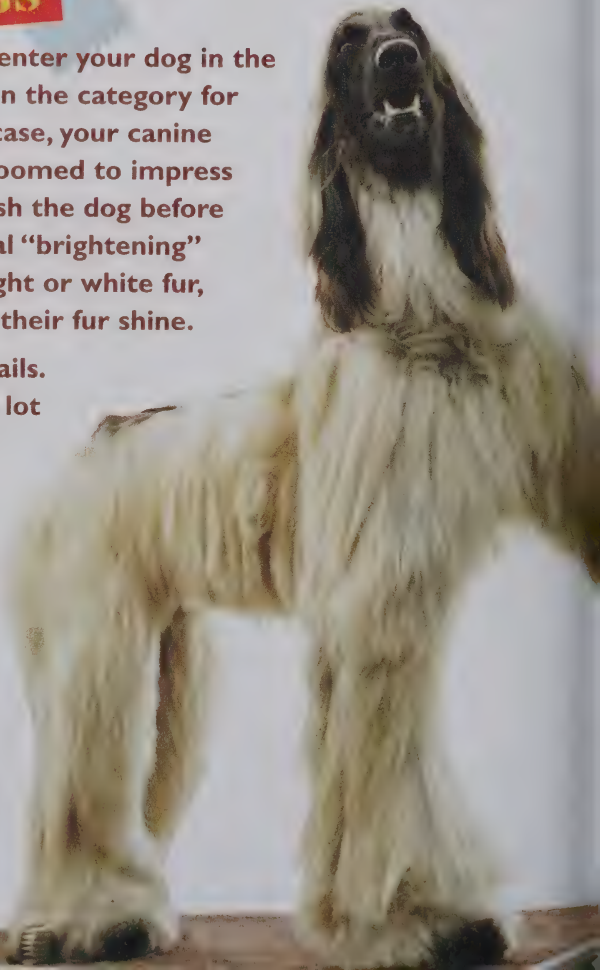
If you want to show the rest of the world how special your pet is, you might want to enter it in the local county fair or pet show. Some breeders spend years training for these events because it isn't easy to get into the winner's circle. The main thing is to have fun, even if you don't win. Here are some tips from the experts to give you a head start.

DAZZLING DOGS

You might enter your dog in the category for its breed, or in the category for household pets. In either case, your canine buddy needs to be well groomed to impress the judges. Bathe and brush the dog before the show. There are special "brightening" shampoos for dogs with light or white fur, and conditioners to make their fur shine.

Don't forget to trim the nails. Judges don't like to hear a lot of clicking as you walk the dog around the floor.

Judges look for the dog that is the best example of its breed. So if you have a pure breed, do some research about its desirable characteristics. If your dog is not a pure breed, general appearance and personality are what count.



HAVE A WINNER?

COOL CATS

Cats need the same kind of grooming attention as dogs. You might have to get your cat used to being bathed well ahead of your first show. Experts use three kinds of shampoo before a show—one to remove grease and oil, one to remove residue from previous shampoos, and one to give a glistening coat. Conditioners leave the hair silky to the touch. Nails should be trimmed.

As with dogs, judges award ribbons to cats that have the best examples of their breed characteristics. In the domestic cat categories, there are no breed standards. Grooming and personality make the difference. Your cat needs to be affectionate and comfortable around new people. If she "talks" a lot, she'll win extra points.

FAB FISH

Tropical fish have shows of their own, too. Judges look for perfect specimens of each kind of fish. Experts feed their fish a pinch of frozen brine shrimp three times a day to keep them in peak condition.

Make sure there is nothing in your tank that can cut or shred your fish's fins. Use a net to scoop the fish out of the tank. If you use a container, you may cut the fins or damage the scales. To encourage a specific fish to grow, keep it in its own tank and change 30 percent of the water every few days. (At least you don't have to bathe fish!)

Judges look for a fish that swims around a lot and holds its fins up like its variety should.

(continued)

CHARMING CHICKENS

Feed baby chicks high-protein food until they are about 18 weeks old, and then switch to a feed that contains corn and soybean meal.

Before a show, wash the chickens in a mild dish detergent and give them a final rinse of lemon juice and water to bring out the feathers' highlights. Preen the feathers with your fingers while they are drying so there aren't any tips sticking out and all feathers are pointing in the same direction. Rub a little canola oil and rosemary on the legs to kill mites and make the legs shine.

Winning chickens are those that show all the characteristics of their breed and are easily handled. If you handle your chicks every other day for 10 minutes or so, right from the time they hatch, they will be well mannered when the judges inspect them.

RADIANT RODENTS

Rats and mice spend a lot of time cleaning themselves, so you shouldn't have to do too much grooming. Lots of fresh fruit and whole grains should keep their coats in good condition. Handle rats and mice every day, beginning at birth. This way, they will become accustomed to people.

Judges say the perfect rat or mouse is pleasing to the eye and should be curious and active. If you can train your animal to give kisses, walk on a tightrope, or jump to you on command, you will definitely catch the judge's eye.

CAPTIVATING CATTLE

Your cattle need a basic diet of protein, corn, and oats, but you may need expert advice on how to adjust the amounts of each so that the animals fill out at the right time.

Keep the cattle inside during really hot weather. They may even need fans to keep cool. Don't keep them on cement, though, as this can make them stiff-legged; the judges like to see animals that are flexible and able to take long strides.

Brush your cattle at least three times a day. Groom them before a show by washing them with dish detergent and rinsing them well so they don't have flaky skin at show time. Some experts trim their cattle's coats so that their muscles are emphasized.

IN THE RING

Don't be surprised if your animal has an attack of nerves the first few times you enter a show. It takes a while to get used to the excitement of a showring—and just maybe the thrill of a blue ribbon!

Animal Trivia

Animal Gangs

army of caterpillars
army of frogs
bale of turtles
business of flies
cast of hawks
charm of goldfinches
colony of penguins
convocation of eagles
down of hares
dray of squirrels
family of sardines
host of sparrows
hover of trout
knab of toads
murder of crows
nest of vipers
pladge of wasps
plague of locusts
smuck of jellyfish
steam of minnows
troubling of goldfish

Careful You Don't Poison the Cat!

There are some common houseplants that are poisonous to cats. If your feline friend has the habit of chewing green things, don't allow these in your house:

- Azalea
- Dumb cane
- Elephant's ears
- Oleander
- Philodendron
- True ivy

The Ten Most Intelligent Animals
(besides humans, that is!)

1. Chimpanzee (two species)
2. Gorilla
3. Orangutan
4. Baboon (seven species, including drill and mandrill)
5. Gibbon (seven species)
6. Monkeys (especially macaques and the Celebes black ape)
7. Smaller toothed whale (several species, especially killer whale)
8. Dolphin (many of the 80-plus species)
9. Elephant (two species)
10. Pig

The Ten Smartest Dog Breeds

1. Border collie (at right)
2. Poodle
3. German shepherd
4. Golden retriever
5. Doberman pinscher
6. Shetland sheepdog
7. Labrador retriever
8. Papillon
9. Rottweiler
10. Australian cattle dog

Dogs, Our

Why They Do What They Do Dogs bark to express themselves. Barking for a long time, with pauses in between barking bouts, probably means a dog is bored. Short, loud barks mean a dog is ready to play. If your dog whines between barks, it may be frightened or needing reassurance. Loud noises—like thunderstorms—scare many dogs and send them scurrying to hide under the couch or in the bathtub. They want a small space where they will feel safe. Try playing relaxing music to calm a dog during a storm.

Body Language

HAPPY AND PLAYFUL: Tail wagging; bowing position with front legs down and rear end up.

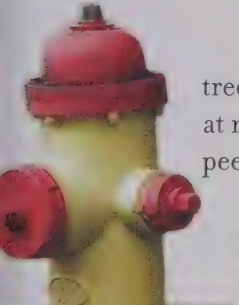
SUBMISSIVE: Lying on its side, tail tucked in and ears pulled back; stomach may be exposed, and the dog will avoid eye contact.

UPSET OR ANGRY: Ears pricked up, weight on front feet, fur on end, teeth exposed. Don't pet.

How to Keep Your Dog Amused

Like humans, dogs need mental and physical exercise to stay healthy. If they don't have enough stimulation they can get bored, and a bored dog means trouble—chewed furniture or shoes for starters. Try these activities with your dog. You'll both have fun.

Best Friends



Why does your male dog lift his leg and pee on every tree and post? He is marking his territory—leaving his scent at nose level to tell other dogs this is his territory. Dogs can pee up to 80 times an hour. They never run dry.

DAZZLING DOG FACT

Dogs can hear sounds from four times farther away than humans can. They know you are coming before you even reach the front door.

Dachshund

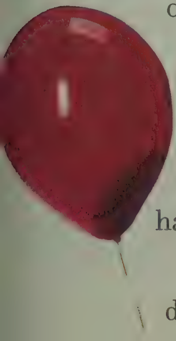
Here are some of North America's most popular dog breeds:

Beagle

German shepherd

Labrador retriever

Golden retriever



Bounce a beachball or balloon off your dog's nose a couple of times. He'll soon get the idea and try to keep it in the air. If the balloon breaks, don't let him eat the pieces.

Play hide-and-seek. You can get someone else to cover the dog's head with a towel while you hide somewhere in the house, or hide the dog's toy and have him search for it.

A good, long walk is a great way to keep your dog alert and healthy—and it's good for you, too.

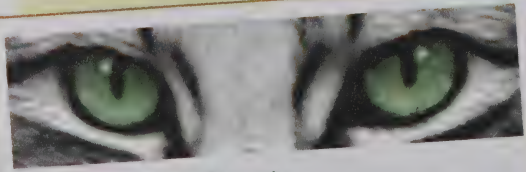
Cats, the Purrrfect Companions

Why They Do What They Do

- Cats rub against your leg because they are marking their territory. You belong to them, and don't forget it!

- Why do they climb trees? Cats are natural-born climbers. So how come they get stuck in trees? They might be nervous about falling, or maybe all the fuss below them makes them scared to come down. If your cat is up a tree for longer than a day, it needs to be rescued.

- Does your cat eat grass and then throw up? Most cats do. It may be a way to get rid of any poisons in their system. Or cats may just like the taste of grass, even if they throw up later. Anyway, vets say it does no harm. Easy for them to say. They don't have to clean up the mess.

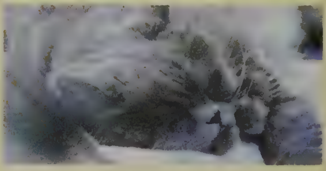


Crazy Cat Facts

Cats have great eyes. They can see six times better than humans in dim light. When it is very dark, they use their whiskers to help them find their way.

Hear, Kitty!

Cats have 32 muscles in each ear!



To live long, eat like a cat and drink like a dog.
–German proverb

How to Keep Your Cat Amused

Cats can get depressed, just like humans. Here are some things you can do to keep them happy and alert.

- Give them lots of toys to play with—Ping-Pong balls, cardboard boxes, paper bags (no handles), and small stuffed toys are all good.
- Make sure there is a window where your cat can watch the outside world. A nearby bird feeder makes life even more interesting for your feline friend.
- Play with your cat. Turn out the lights and switch on a flashlight. Move the beam around and watch the fun.

Here are some of North America's most popular cat breeds:

1. Persian
2. Himalayan
3. Maine Coon
4. Siamese
5. Abyssinian

Body Language

Happy and alert: Tail up, ears upright and facing forward, eyes open or half closed.

Submissive: Drooping tail, ears flattened, body in low crouch position (not wise to pet when you see this position, as the cat may become defensive).

Upset or angry: Tail swishing back and forth, body arched, ears flattened, fur standing on end. This cat needs to be left alone!

make your own pet treats

Here are some delicious and nutritious snacks you can make for your dog or cat. Whip up a batch of these for your furry friends. They will love you all the more! Be sure to read the recipes all the way through before you start making the biscuits.

Dog Bones

- 1 cup whole-wheat flour
- ½ cup cornmeal
- ½ cup soy flour
- ½ cup wheat germ
- ¼ cup crumbled, crisp bacon
- ½ cup water
- ½ cup bacon drippings (add corn oil to make ½ cup)
- 1 large egg, beaten

Preheat the oven to 350°F. Combine dry ingredients in large bowl and mix well. Add the rest of the ingredients and stir. If the dough seems too sticky, add a bit more flour. Roll the dough into a ball and place on waxed paper. Roll it out to a ½-inch thickness and cut into bone shapes. Bake on an ungreased cookie sheet for about 25 minutes. Store, tightly wrapped, in the fridge.

Makes about 24.

Cat Cookies

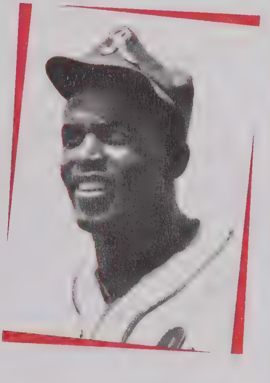
- 1 cup whole-wheat flour
- ½ cup cornmeal
- ½ cup soy flour
- ½ cup wheat germ
- ½ cup dried catnip
- ¼ cup well-drained tuna (packed in water)
- ½ cup of the tuna liquid (add water to make ½ cup)
- ½ cup corn oil
- 1 large egg, beaten

Preheat the oven to 350°F. Combine dry ingredients in large bowl and mix well. Add the rest of the ingredients and stir. If the dough seems too sticky, add a bit more flour. Roll the dough into a ball and place on waxed paper. Roll it out to a ½-inch thickness and cut into small shapes with a cookie cutter. Bake on an ungreased cookie sheet for about 25 minutes. Store, tightly wrapped, in the fridge.

Makes about 24.

See page 177 for a metric conversion chart.

SPORTS



He Had a Peach of an Idea!
- the invention of basketball . . 130

Stanley and His Traveling Cup
- hockey's top prize 132

Baseball's Barrier Breaker
- the Jackie Robinson story 134

Tips From the Champs
- ways to win 138

Believe it or not, one of America's favorite games was invented in bed. On a cold December night in 1891, James Naismith, a Canadian Presbyterian minister, went to bed feeling discouraged. He was teaching at the International YMCA Training School in Springfield, Massachusetts, and was convinced that he could teach clean living through sports. The only problem was that his students weren't interested.

He Had a Peach

Naismith had tried many different sports and exercises, but his students were bored. On his way to bed that night, he had an idea that caused him to sleep restlessly and dream. Later, he said, "I believe I am the first person who ever played basketball, and although I used the bed for a court, I certainly played a hard game."

In the morning, Naismith asked the school janitor, Pop Stebbins, for two square boxes for goals. Pop said he didn't have any boxes and then said, "I'll tell you what I do have—two old peach baskets down in the storeroom, if they'll do you any good."

The two men fastened the baskets to the balcony of the gym, and Naismith wrote out his 13 rules (12 of which still apply). Then Naismith picked up a soccer ball and faced his troublesome students. "It was the start of the first basketball game and the finish of trouble with that class," he remarked.

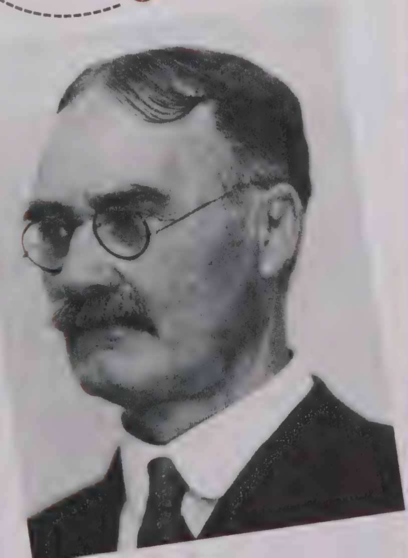
Funnily enough, Naismith didn't think of cutting the bottoms out of the baskets. Every time a ball went in, someone had to climb a ladder to retrieve it. It wasn't until 1906 that the basket bottoms were cut away.

# of an Idea!

Basketball spread like wildfire through YMCAs all over the United States. In the early days, players roughed each other up so much that they had to wear padded pants and elbow and knee guards. Wire fences were built around courts to keep fans from being hurt or from throwing things at players. That's how players became known as "cagers."

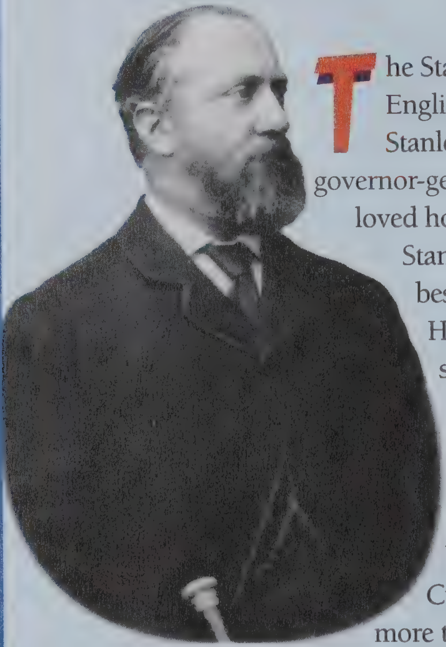
* * *

James Naismith died in 1939, at age 78. He didn't live to see the Naismith Memorial Basketball Hall of Fame open in Springfield, nor did he live to see basketball become one of the most popular team games ever, played by millions on playgrounds, and in backyards, gyms, and arenas all over the world.



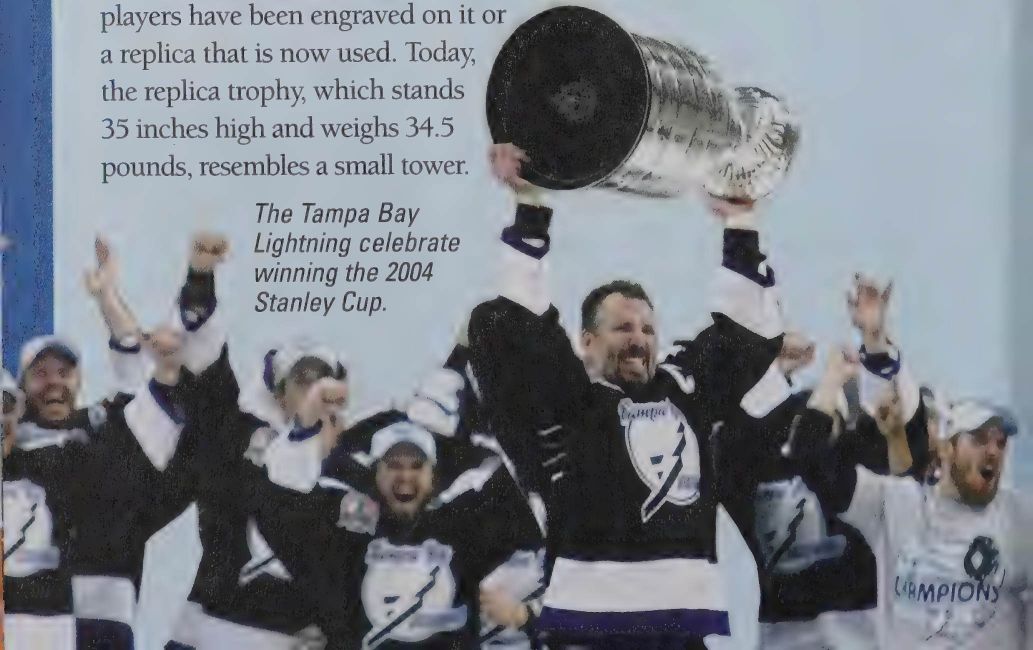
STANLEY AND HIS

It's not all that much to look at, it has a few dents and scratches, and it is getting old, but the Stanley Cup is still hockey's most treasured trophy.



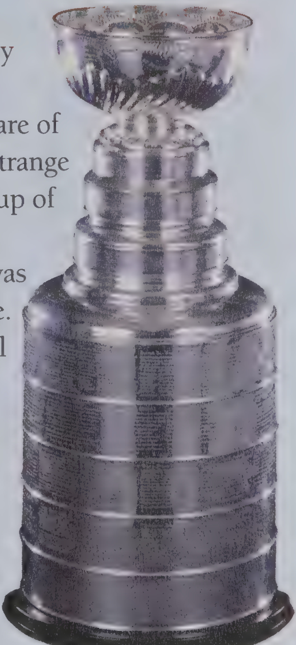
The Stanley Cup dates from 1892, when Englishman Frederick Arthur, Lord Stanley, the Earl of Preston, was governor-general of Canada. Because his sons loved hockey and played in Ottawa, Lord Stanley decided to give a prize to the best amateur hockey team in Canada. He chose a 7-inch-high, gold-lined silver bowl, for which he paid about $50. He could never have imagined what would happen to it.

Since 1910, the Stanley Cup has been presented to professional hockey teams that win the Stanley Cup championship. The names of more than 2,300 National Hockey League players have been engraved on it or a replica that is now used. Today, the replica trophy, which stands 35 inches high and weighs 34.5 pounds, resembles a small tower.



The Tampa Bay Lightning celebrate winning the 2004 Stanley Cup.

TRAVELING CUP



The original Cup has a place of honor in the Hockey Hall of Fame and Museum in Toronto, Ontario.

Each player on the winning team gets to take care of the trophy for 24 hours, and some have taken it on strange adventures over the years. In the early 1900s, a group of mischievous players kicked it into Ottawa's Rideau Canal. Luckily, the water was frozen and the Cup was still there in the morning—dented, but in one piece.

Once, on the way to a celebration, the Montreal Canadiens team stopped to change a flat tire and accidentally left the trophy on the side of the road.

In 1962, a fan from Montreal saw the Stanley Cup in a display case in Chicago Stadium. He opened the case, took the Cup, and was almost out of the stadium when a policeman asked him where he was going with it. "I want to take it back where it belongs," he answered, "back to Montreal." The thief was angry that the Chicago Blackhawks had beaten the Canadiens the year before.

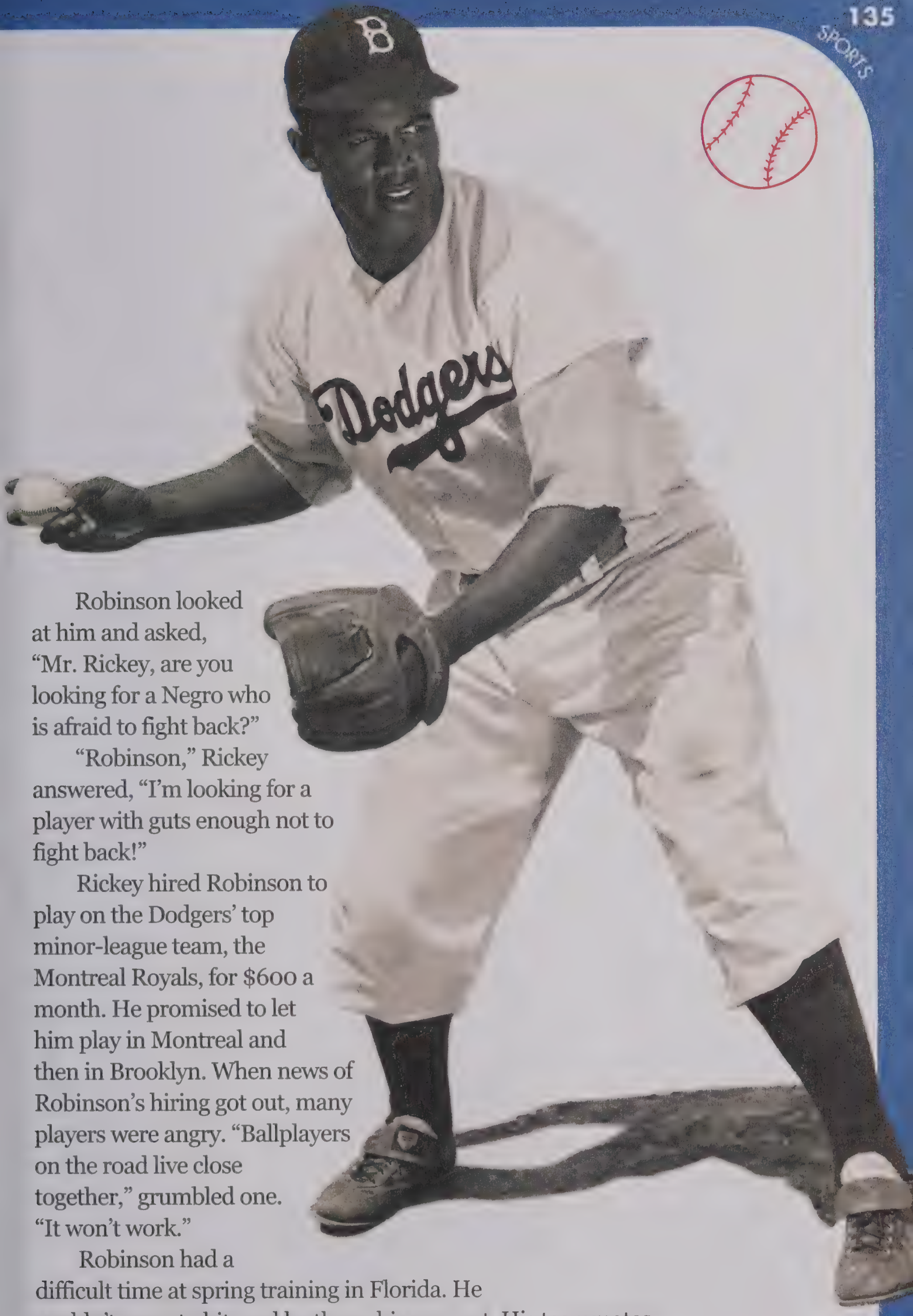
Today, one of three "Keepers of the Cup" travels about 300 days a year with the Stanley Cup, taking it on tour for fans to admire. The trophy is such an important symbol of hockey history that it is insured for almost $1 million.

BASEBALL'S BARRIER BREAKER

In April 1946, a ballplayer named Jackie Robinson was about to make history. All eyes were on him, but not all the people in the ballpark were friendly.

Jackie Robinson was young, talented, and black. In the 1940s, the United States was still a segregated country, and no black man had ever played on a major league team. Black players had their own league. But because black Americans had fought alongside white Americans during World War II, some people were changing their minds about segregation. One of them was Branch Rickey, president of the Brooklyn Dodgers. He had always disliked the fact that blacks couldn't play with whites, and he was ready to change things.

Rickey had heard about the 26-year-old Robinson, who was playing shortstop for the Kansas City Monarchs in the Negro League. He arranged to meet and talk with him. "I know you're a good ballplayer," Rickey said. "What I don't know is whether you have the guts to play no matter what happens. There'll be beanballs. You'll be spiked. You'll be called hated names. . . . There's virtually nobody on our side—no owners, no umpires . . . and I'm afraid that many fans will be hostile."



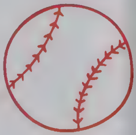
Robinson looked at him and asked, “Mr. Rickey, are you looking for a Negro who is afraid to fight back?”

“Robinson,” Rickey answered, “I’m looking for a player with guts enough not to fight back!”

Rickey hired Robinson to play on the Dodgers’ top minor-league team, the Montreal Royals, for $600 a month. He promised to let him play in Montreal and then in Brooklyn. When news of Robinson’s hiring got out, many players were angry. “Ballplayers on the road live close together,” grumbled one. “It won’t work.”

Robinson had a difficult time at spring training in Florida. He couldn’t seem to hit, and he threw his arm out. His teammates wouldn't speak to him off the field, and once he had to pack up quickly because there was a rumor that a mob was coming for him. But Branch Rickey remained convinced that Robinson was a good baseball player.

On April 18, 1946, the Montreal Royals played the Jersey City Giants in New Jersey. It was Robinson's debut. Rachel, his wife, remembered the day well: "We had come through fire that spring. We'd had to endure so much humiliation. Jackie knew the first game was a proving ground. His self-esteem, his whole future was on the line. We were so loaded with tension. I couldn't even sit down. I just paced back and forth in the stands."



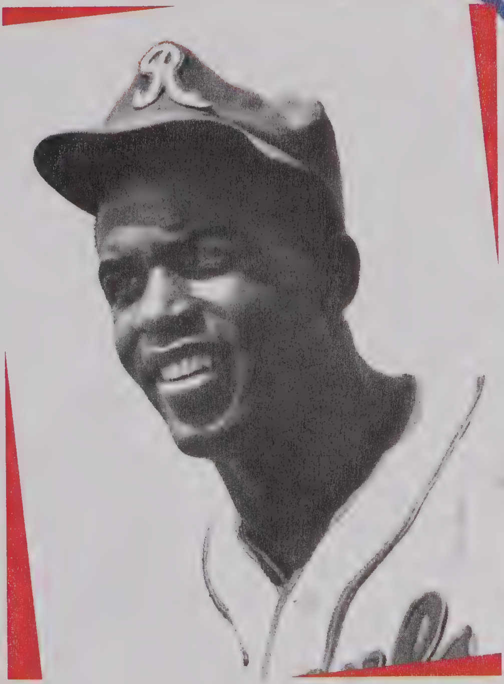
Rachel's worries soon disappeared. Robinson batted five times. He had four hits, including a home run with two men on. He stole two bases and scored twice from third base by faking a steal of home, causing the pitcher to balk. When he hit the home run, a photographer snapped a picture of teammate George Shuba shaking his hand—the first photo of a white player congratulating a black one.

Rickey was right about Robinson's talent. He was also right about the abuse that would come. Opposing players taunted Robinson, spiked him, and knocked him down. After one game, angry fans in Baltimore surrounded the Royals' locker room. They said that they would beat up Robinson if they saw him. The team had to wait for hours for the crowd to go away before they could walk Robinson back to his segregated hotel.

Montreal fans, on the other hand, adored him. Jackie and Rachel were often surrounded by autograph seekers. "We were the only black people in the neighborhood," said Rachel. "Whenever

Branch Rickey changed baseball forever.

we walked anywhere, people and kids trailed after us. When Jackie was on the road, the neighbors came over to check on me."



The Montreal Royals won the International League pennant in 1946, and Robinson won the batting title. Then, in the Little World Series against Louisville in Louisville, the Royals faltered. They were down two games, and every time Robinson stepped onto the field, the fans booed and verbally abused him.

The final games of the series were in Montreal. The city was covered in snow; huge snowbanks marked the foul lines. When Robinson took the field, the fans went wild. He repaid them by scoring or batting in the winning runs. The Royals won the series.

Thousands of fans stood and cheered until Robinson came out of the clubhouse. They mobbed him, but Robinson gently pushed his way through the crowd until he saw an opening. Then he ran. The crowd chased him down the street until someone driving by in a car opened the door and yelled, "Jump in, Jackie!" He did—right onto a lady's lap—and escaped his admirers. A newspaper reporter recorded the moment as "probably the only day in history that a black man ran from a white mob with love, instead of lynching, on its mind."

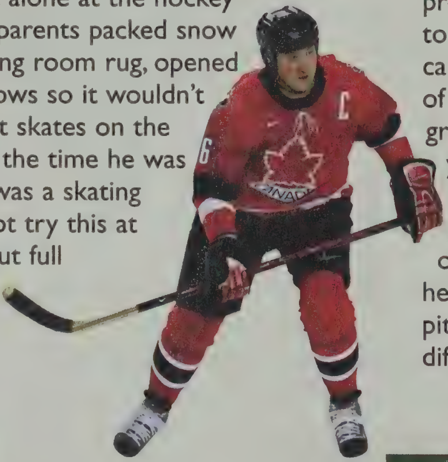
Years later, Robinson said, "I owe more to Canadians than they'll ever know. . . . They were the first to make me feel my natural self."

Today a life-size statue of Jackie Robinson stands outside Olympic Stadium in Montreal. Its plaque reads: "Jackie Robinson will forever reside in the hearts of Montrealers as a symbol of supreme courage and perseverance." He died in 1972.

Tips From the Champs

Did you ever wonder how some of the great athletes got their start? Not all of them had coaches and sports camps to help them. Here are some of the more creative ways they reached the tops of their games.

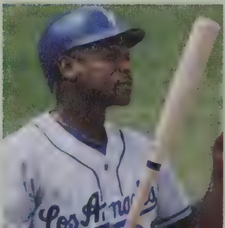
MARIO LEMIEUX When Mario and his brothers were too young to play in the street or to be left alone at the hockey arena, their parents packed snow onto the living room rug, opened all the windows so it wouldn't melt, and put skates on the toddlers. By the time he was four, Mario was a skating whiz. (Do not try this at home without full cooperation from your parents!)



DAVIS LOVE III Davis's golf pro father used to park a golf cart at the edge of a practice green and have young Davis hit balls at different parts of it. That way, he learned to hit pitch shots at different heights.

DOUG FLUTIE This quarterback's father taught his children a game he called Spoons. He put a spoon in the middle of a card table and then said, "Ready, set, go!" The first person to get the spoon was the winner. Doug says it was a great way to improve his hand speed.

MIA HAMM Soccer forward Mia says playing with boys helped her game. Because the teenage boys were stronger and faster, Mia had to learn tactics and techniques that would make up for the gap in physical ability.



RICKEY HENDERSON The outfielder, who was called "the man of steal," got his speed from chasing chickens on his grandmother's farm. He'd put dozens of them in one coop and chase them as they ran in every direction. "There wasn't a chicken on that entire farm that could outrun me," he says.

Health

Your Basic Body Bits
- body parts 140

You Are Getting Very Sleepy . . .
- sleep positions 144

Terrific Teeth
- teeth, the Tooth Fairy 146

Halting the Hiccups
- remedies and more 148

The Ins and Outs of Vitamins
- what to eat and why 150

Get Up and Go!
- how to burn off calories 151

The Care and Feeding of Your Brain
- smart eating 152

How to Be a Genius
- brain exercises 153

Onions and Oatmeal!
- good for what ails you 154

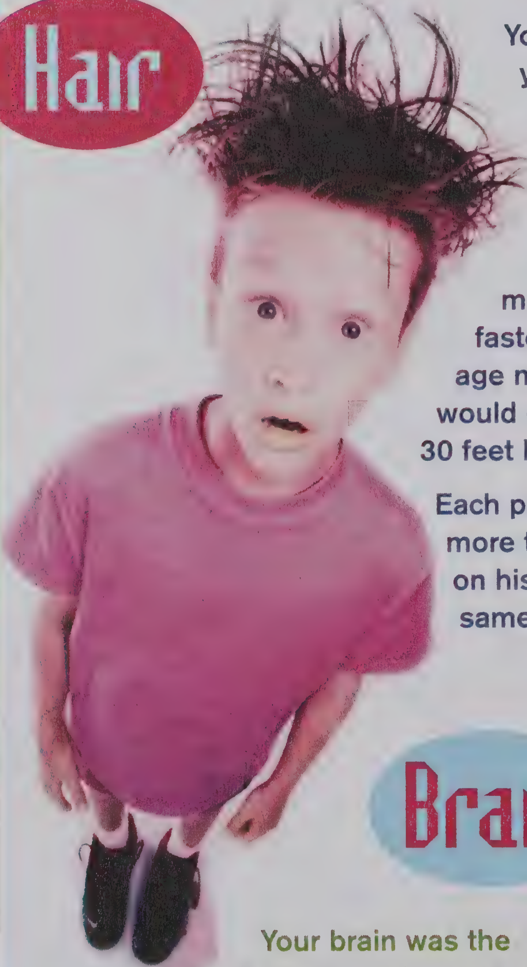
The Man Who Couldn't Stop Walking
- a champion pedestrian 156

Fabulous Feet
- foot factoids 157

How to Remember
- memory tricks 158

Your Basic

Hair



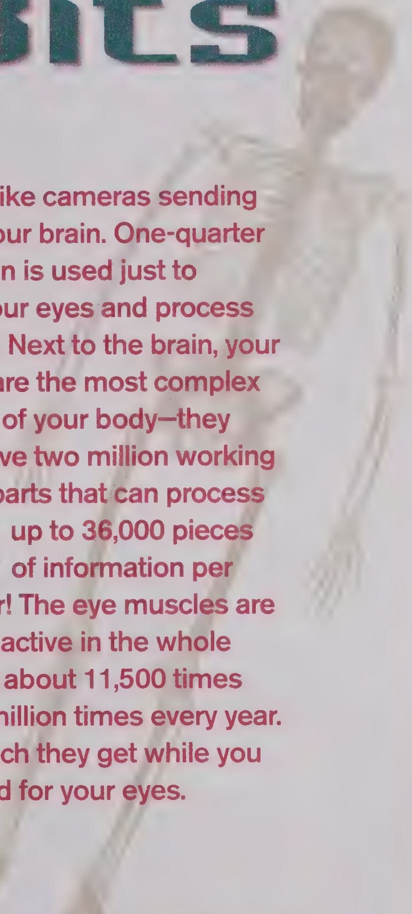
You lose about 100 hairs from your head every day. Don't sweat it. You have almost 100,000 hairs on your head, and new ones are always growing. Scalp hairs grow at a rate of about .4 inch per month, but beard hairs are the fastest growing of all. If an average man never shaved, his beard would grow to be nearly 30 feet long in his lifetime!

Each person is believed to have more than five million hairs growing on his or her body at once, the same number a gorilla has.

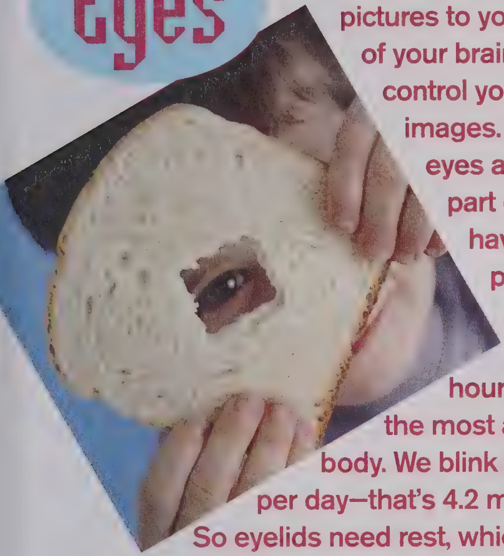
Brain

Your brain was the fastest-growing part of your body until you were 5 years old. In fact, it tripled in size in your first year. Now your brain makes up 2 percent of your body weight and is 85 percent water. The average adult brain weighs 3 pounds. The heaviest brain on record weighed 5 pounds. Albert Einstein's brain was actually pretty small, weighing in at 2.6 pounds.

Body Bits



Eyes



Your eyes are like cameras sending pictures to your brain. One-quarter of your brain is used just to control your eyes and process images. Next to the brain, your eyes are the most complex part of your body—they have two million working parts that can process up to 36,000 pieces of information per hour! The eye muscles are the most active in the whole body. We blink about 11,500 times per day—that's 4.2 million times every year. So eyelids need rest, which they get while you sleep. And, yes, carrots are good for your eyes.

Ears

Ears not only help you hear, they also help you keep your balance. The human ear canal is about 1 inch long and only about one-quarter of an inch in diameter. Earwax coats the ear canal to keep dirt from getting into your ear. People who live in big cities produce the most earwax.

Nose

The marvelous human nose can distinguish from 3,000 to 10,000 different smells. That's because it contains about 12 million smell receptor cells. Your nose recognizes smells best when you are about 10 years old. When it isn't smelling, the nose can produce a sneeze that can reach speeds of 100 miles per hour. Stand back!

Mouth

The only bone in the body that is not connected to another bone is the hyoid. It is a U-shaped bone at the base of the tongue that supports the tongue muscles. Like fingerprints, tongues are unique. No two people have the same tongue print. Taste buds are found on your palate (the roof of your mouth) and down your throat, as well as on your tongue. The average person produces enough spit in a lifetime to fill two swimming pools—6,250 gallons of the stuff!

See page 177 for a metric conversion chart.

Skin

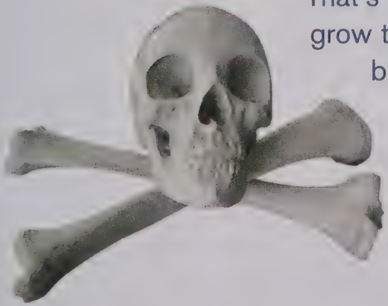
Your skin is actually the largest organ in your body, with a surface area of about 25 square feet by the time you are an adult. Even your eyes have a thin layer of skin. You are constantly shedding skin—600,000 cells per hour. All of that shedding totals 1½ pounds every year. Every 28 days, each skin cell on your body is new. In your lifetime, you will grow almost 1,000 new skins.

Heart

Your heart pumps about 2,000 gallons of blood every single day. That's enough to fill about 40 bathtubs. By the time you are 70 years old, your heart will have beaten almost three billion times. Each red blood cell makes the round-trip from your heart through your body and back again in 20 seconds. And that can be quite a trip—there are 60,000 miles of blood vessels in the human body!

Bones

When you were born, you had more than 300 bones in your body. By the time you are an adult, you will have only 206. That's because some of your baby bones grow together as you age. Your smallest bone, called the **stapes,** is in your ear. Your longest bone is your thighbone, or **femur.** Its length is about one-quarter of your height. More than half the bones in an adult's body are in the hands and feet. Your face, by the way, has 14 bones.

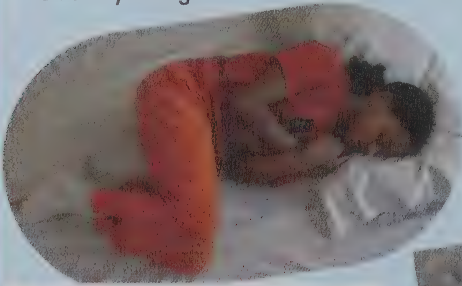


You Are Getting

Do you realize that you spend about one-third of your life sleeping? Think about it—8 hours is one-third of a day, and one-third of 365 days is about 122 days' worth of sleeping each year!

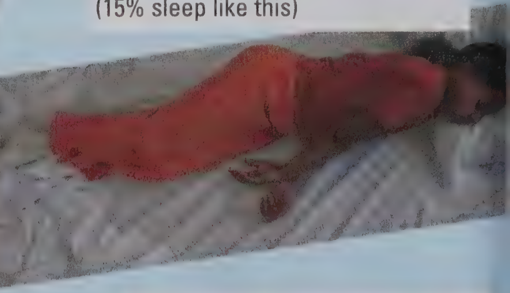
What Sleep Positions Say About You

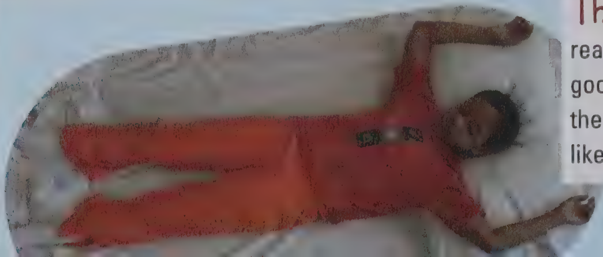
Some scientists think the way humans sleep gives clues to our personalities. Here's what a British professor, Chris Idzikowski, has come up with. See if you agree.



The Fetus You may be tough on the outside, but you're sensitive at heart. You may seem shy at first, but soon loosen up around people. (41% sleep like this)

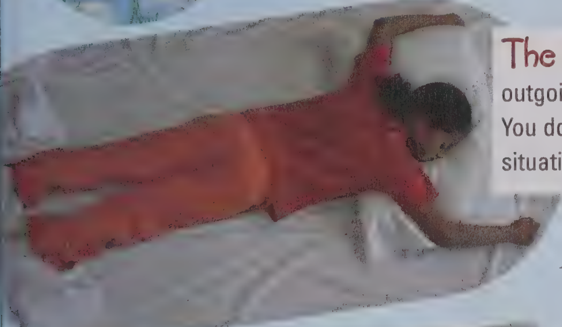
The Log You are easygoing and social. You like being part of the popular crowd. You trust strangers and may be tricked easily. (15% sleep like this)





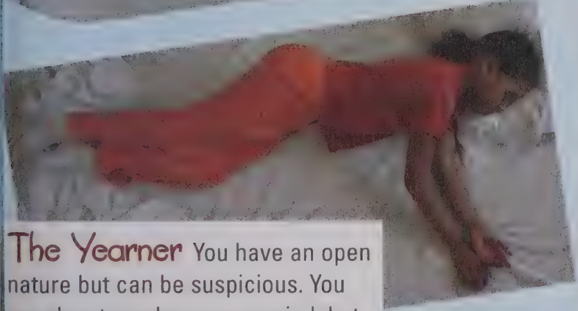
The Starfish You are always ready to listen to others and make good friends. You don't like to be the center of attention. (5% sleep like this)

Very Sleepy . . .



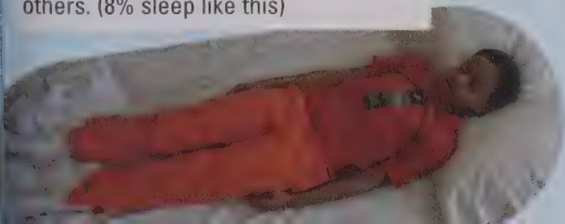
The Freefall You are quite outgoing and sometimes loud. You don't like criticism or difficult situations. (7% sleep like this)

> *In sleep we are all equal.*
> —Spanish proverb



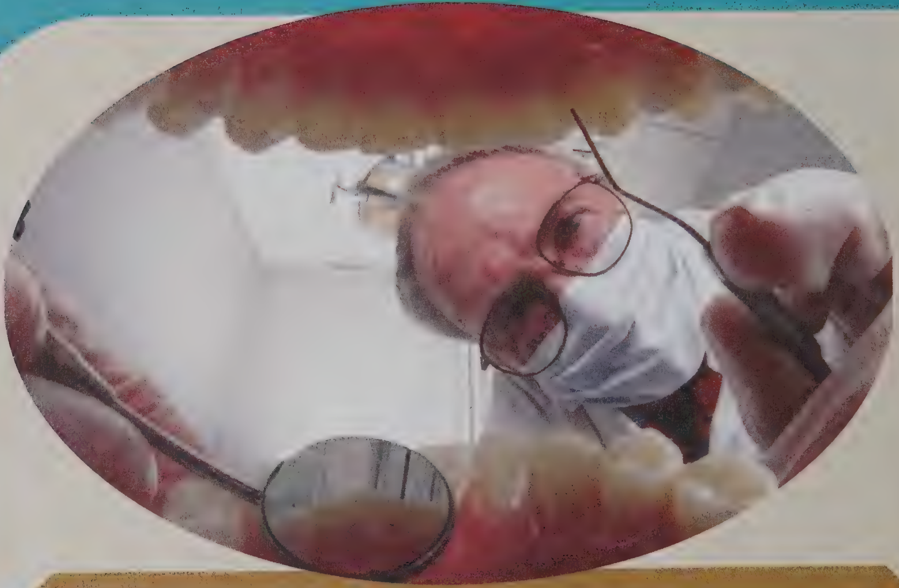
The Yearner You have an open nature but can be suspicious. You are slow to make up your mind, but once you do, you don't change it. (13% sleep like this)

The Soldier You are generally quiet and reserved. You don't like a fuss and set high standards for yourself and others. (8% sleep like this)



Average Time Spent Sleeping at Different Ages

Age	Hours per day
0–3 months	16–22
3–5 years	11
6–13 years	10
14–18 years	8.5
19–30 years	8
31–45 years	7.5
46–49 years	7
50+ years	6



Terrific Teeth

- You have 32 permanent teeth. The eight flat front incisors are for biting, scraping, and cutting.
- Your four pointy canines pierce and tear food.
- Your eight blunt premolars and 12 molars crush and grind food.
- The enamel on the surface of your teeth is the hardest substance in your body.
- Teeth have a soft center made of pulp.
- The teeth roots are fixed in sockets in the jawbone. Nutrients from the pulp feed the teeth and roots.
- Bacteria in your mouth produce acid that rots teeth. Brush, brush, brush!

America's Only Fairy

No one knows exactly when or where she was born, but it was somewhere in America and sometime just after 1900. A child lost a tooth, placed it under the pillow, and magic happened in the night. Now the Tooth Fairy is busier than Santa or the Easter Bunny. She's at work every night, collecting teeth and leaving gifts, usually money. She appears all over the United States and Canada, and in Britain, Australia, parts of Spain, and North Africa.

Children have 20 baby teeth to lose, and doing something special to mark the end of babyhood is a very old tradition. In Russia, a baby tooth was put in the mother's apron for safekeeping. In some parts of Mexico, it was put in a shoe and taken away by a mouse instead of a fairy. Sometimes the tooth was thrown over the roof for good luck, or sprinkled with salt, or thrown into a fire. Wafting in on the night breezes with her little gifts, the Tooth Fairy seems the best tooth tradition of all.

New Life for Old Toothbrushes

Rule Number One: Don't throw it away!

- You can keep an old toothbrush for cleaning your keyboard.
- A toothbrush is perfect for stenciling, splatter painting, or other crafts.
- Use some duct tape to fasten a toothbrush to a long knitting needle, and you'll have a fabulous back-scratcher. Now, that's creative!

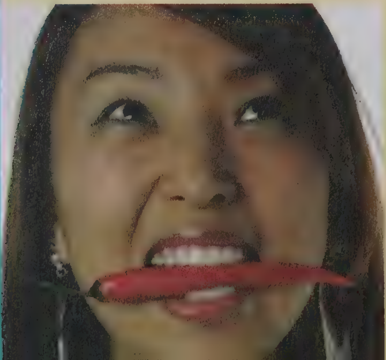
Halting the Hiccups

Sometimes hiccups can be funny, but when they go on for too long, you just want them to stop. Folklore has dozens of hiccup remedies. The next time you get the hiccups, see if one of these solutions works for you.

- Put ice cubes on each side of your throat until the hiccups stop, or suck on ice cubes.
- Eat a spoonful of peanut butter, vinegar, or sugar. (Pick one. Don't try them all together or you'll make yourself sick!)
- Eat something spicy—like a really hot pepper.
- Drink a glass of water from the wrong side of the glass. (Wear a bib!)
- Breathe into a paper bag.
- Pant like a dog.
- Spit on a rock, then turn it over.
- Stick out your tongue while holding your breath for as long as you can.

Excuse Me!

Have you got a special remedy for curing hiccups or a most-embarrassing-moment hiccup story? Share it with other kids at Almanac4kids.com/tellus.



- Drink water while your nostrils are pinched and your ears are plugged. (Get a friend or two to help you with this one.)
- Lie across a chair on your stomach and drink a glass of water.

Hey, What Is a Hiccup?

A hiccup is caused by a contraction of your diaphragm, the muscle in your chest that helps you inhale and exhale. When something irritates your diaphragm, the breath it was pushing out hits your larynx and makes a noise. Nobody knows exactly why it happens.

Girls get hiccups more often than boys, but a man holds the record for the longest case of hiccups. According to the *Guinness Book of World Records,* 28-year-old Charles Osborne of Anthon, Iowa, started hiccuping one day in 1922, as he was lifting a 350-pound hog onto the scales. Osborne continued hiccuping—10 to 40 hiccups every minute—until 1990, when he suddenly stopped. He said the only real problem with his hiccups was that he was always afraid his false teeth would fall out.

The Unsolved Mysteries of Yawns

We dare you to read this without yawning. Scientists conducted a test in which 300 people individually watched a videotape of someone yawning. More than half of the people yawned within five minutes. All of them reported feeling like they wanted to yawn, even if they didn't actually do it. We know that yawning is contagious, but we don't know why.

Here's more of what we know—but don't know the reason for:

- Babies yawn in the womb.
- Anxious people and nervous people yawn a lot.
- Bored people yawn more than alert people.

(Have *you* yawned yet?)

The Ins and Outs of Vitamins

Getting enough vitamins and minerals isn't hard. All you really need to do is eat a healthy diet. Build it around fruits and vegetables (eight to ten servings a day), whole-grain breads and cereals, beans, low-fat poultry and meat, nonfried fish, milk, cheese, and yogurt.

Here's what vitamins do and where they hide in your food.

VITAMIN	WHAT IT DOES	WHERE IT IS
Vitamin A	• good for your eyesight • helps you see in the dark • helps fight infections • helps bone growth	milk, cheese, eggs, liver, fish oil, yellow fruits, dark-green and yellow veggies
B Vitamins	• help make red blood cells • help make energy and release it	whole grains (wheat and oats), fish and seafood, meat, poultry, eggs, dairy products, leafy green veggies, beans and peas, citrus fruits
Vitamin C	• keeps gums and muscles healthy • helps heal cuts • helps body resist infection	citrus fruits and juices, berries, tomatoes, peppers, broccoli, potatoes, cauliflower, cantaloupe
Vitamin D	• makes strong bones and teeth	milk, egg yolks, fish
Vitamin E	• helps make red blood cells • keeps tissues in eyes, skin, and liver healthy • protects lungs from pollution	whole grains (wheat and oats), wheat germ, leafy green veggies, sardines, nuts, egg yolks
Vitamin K	• enables blood to clot	leafy green veggies, pork, liver, dairy products

GET UP AND GO!

Now that you have all that energy from eating your healthy diet, you are probably looking for ways to burn it off, right? You might be surprised to know that just doing some chores around the house can burn off quite a bit of energy.

Look at the chart below. The column on the left lists the activity, the middle column tells you how many calories you will burn per minute for every pound of your body weight, and the column on the right lists an activity that would burn the same amount. So, if you weigh 100 pounds and are shoveling snow, you are burning 3.8 calories each minute, the same amount you would use playing golf.

Chopping wood	**0.060**	**Playing football**
Mowing lawn	**0.051**	**Horseback riding (trot)**
Shoveling snow	**0.038**	**Golfing**
Painting walls	**0.035**	**Walking (normal pace)**
Weeding garden	**0.033**	**Playing Ping-Pong**
Shopping for food	**0.028**	**Cycling at 5.5 mph**
Mopping floors	**0.028**	**Fishing**
Raking lawn	**0.025**	**Ballroom dancing**

Did You Know

. . . that for every dollar spent on produce at the supermarket, only about 5 cents goes to the farmer who grew it?

. . . that licking a regular-size postage stamp burns 0.007 calories?

The Care and Feeding of Your Brain

Your ability to think, reason, and remember is what makes you special. You owe it to yourself to take care of the organ that makes all that possible—your brain. Do you know what foods are especially good for your brain?

Spinach

Popeye was on to something. Spinach and other dark-green, leafy vegetables contain vitamins A, B, E, and K, as well as folic acid—all very important for healthy brains.

Fish

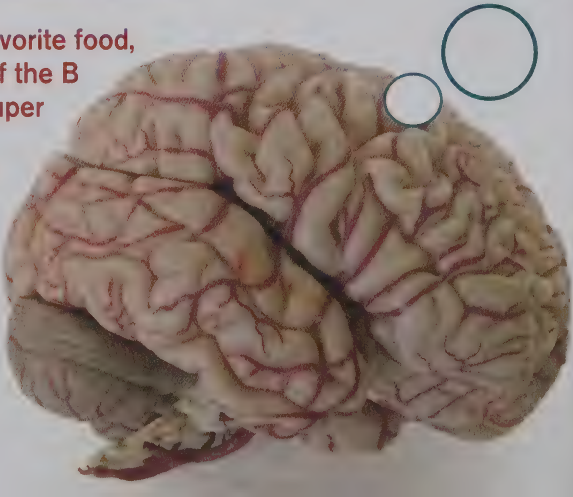
Especially cold-water fish such as salmon, tuna, and sardines. Fish is rich in omega-3 fatty acids, which your brain absolutely needs. Other foods with omega-3 fatty acids are dark-green, leafy veggies and olive, flaxseed, and canola oils.

Blueberries

These little blue health bullets help fight the war against aging. Make sure your parents and grandparents sprinkle some on their cereal, too. Scientists who fed blueberry extract to lab animals found that the animals' aging processes slowed.

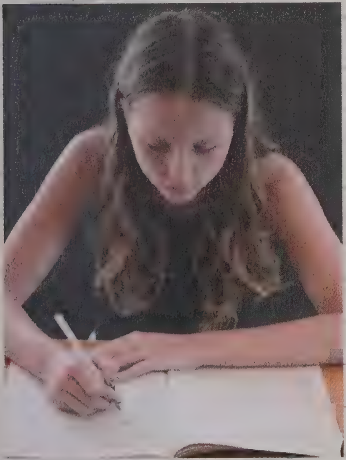
Liver

Probably not your favorite food, but it is a great source of the B vitamins, and they are super brain boosters! They produce chemicals that carry messages between brain cells. If you can't stomach liver, try avocados, beans, chicken, eggs, tofu, and whole grains.

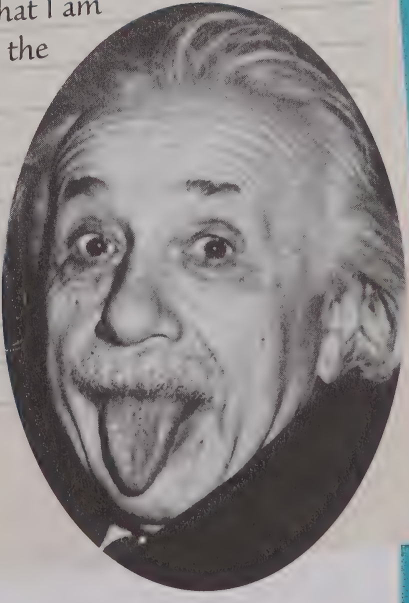


How to Be a Genius

Not many of us are real geniuses, but you can increase your potential by exercising and stretching your brain. Try some of these tips.



- Think in moving pictures instead of snapshots. Try to picture things as a process—the effects, possibilities, and results.
- Trust your hunches. Many geniuses say they know things without knowing how they know them. They say everything, even in science, begins with a feeling.
- Don't give up. Patience is important. Albert Einstein said, "It's not that I am smart, it's just that I stay with the problem longer."
- Have fun. Many geniuses and inventors say that a sense of fun plays an important role in invention.



Get Smart!
You'll find lots more fascinating facts, amazing stories, and fun activities at Almanac4kids.com. Check it out!

Onions and Oatmeal! Good for What Ails You

Years ago, people didn't have drugstores and pharmacies to go to for remedies for minor injuries, itches, and insect bites. They often went to the pantry or into the garden for a remedy that took care of the itch or the pain or the swelling. Some of those good ideas still work today.

Got a Splinter? Grab a Potato

If you get a **splinter,** put a spud on it. Wash and peel a white or red potato, then cut off a piece and grate it. Put the **grated potato** on a piece of gauze and tape it over the area with the splinter. Leave it on overnight, so that the potato can dry out. As it dries, the potato draws moisture to it, including body fluids from around the splinter. All that moisture brings the splinter closer to the surface of your skin and makes it easier to remove. Carrots also work; their beta-carotene helps to heal the skin, too.

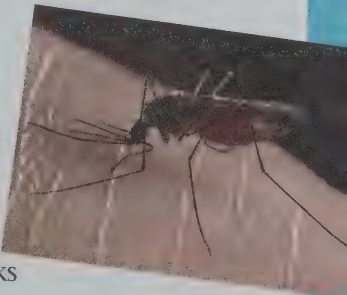
Burn Yourself? Stop the Sizzle

Restaurant cooks discovered that slapping a **cabbage leaf** on a minor **burn** aids in healing. Cabbage is high in glutamine, which helps new cells grow and prevents infection. Make a paste by grinding up some cabbage leaves with a little water in a blender. Put the paste on the burned area and tape gauze over it. Leave it on for 30 to 60 minutes.

Itchy? Take a Bath

Got an **itch** or a **rash** that's driving you crazy? Put a handful of **oats** in an old sock, knot it, and dunk it and yourself in a warm tub. The white milky stuff the oatmeal gives off is cellulose, and that's what will calm the itching.

It's a good idea to take along a little cloth bag of oatmeal when you are camping or hiking in the woods. If you run into something that makes you itchy, wet the oatmeal pouch and squeeze the juice onto the itch, leaving it on until it dries.

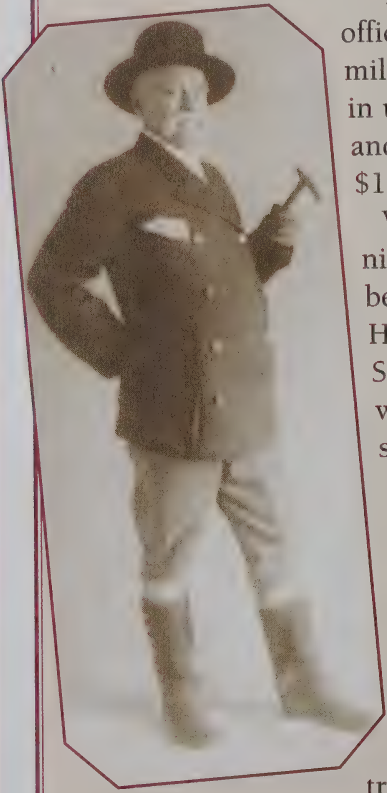


Bitten? Time For an Onion

Sooner or later, we all get bitten by a **mosquito.** When that happens, reach for an **onion.** Yellow and red onions contain sulphur compounds that reduce the swelling and itching that result from the saliva that the mosquito injects when she drinks your blood. Sulphur compounds are what make onions smell. Put a slice of onion on the bite or, to release more of the juice, grate the onion and wrap it in gauze. Tape the slice or the gauze bundle over the bite. You can expect results in about 15 minutes.

THE MAN WHO COULDN'T STOP WALKING

When he was born in 1839, Edward Payson Weston wasn't expected to survive. But 15 years later, his sickly life changed when he took up walking. By the time he was 21, he had accepted a dare to walk 478 miles from Boston to Washington, D.C., for Abraham Lincoln's inauguration as president. It took him 11 days, and he missed the ceremony by a few hours.



At age 28, Weston accepted his first official racing challenge: to walk 1,326 miles from Portland, Maine, to Chicago in under 30 days. He did it, with 1 hour and 20 minutes to spare, and received a $10,000 prize.

Weston became a sports hero and was nicknamed the "Yankee Clipper" because he walked so quickly and easily. He traveled throughout the United States, participating in more than 1,000 walking races. In 12 of these events, he set records.

The most frightening walk Weston ever went on was a 3,895-mile tramp across the United States. He faced tornadoes in the Midwest and blizzards in the Rocky Mountains. At one point, he was so weary and the winds were so strong that he crawled on his hands and knees, following a railroad track for 4 miles so he wouldn't go off course. When he finished, 104 days and 7 hours after he began, he didn't even look tired.

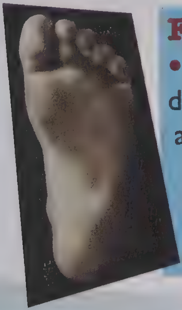
Weston walked all of his life. Sadly, when he was 88 years old, he was hit by a taxi while walking across the street. He spent the last two years of his life in a wheelchair.

See page 177 for a metric conversion chart.

Fabulous Feet

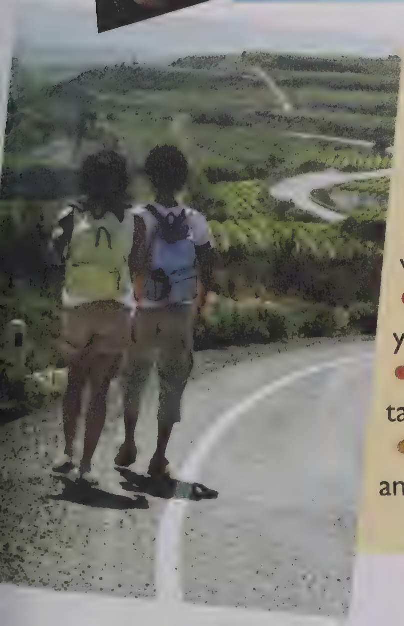
Our feet carry us the equivalent of four to five times around the Earth in an average lifetime. No wonder their 250,000 sweat glands produce nearly a cup of moisture every day.

Each of your feet has 26 small bones, 33 joints, and more than 100 ligaments. They help you balance and walk.



Funny Foot Factoids

- Your foot is as long as the distance between your wrist and your elbow. Check it out!
- The thickest skin on your body is found on the soles of your feet.

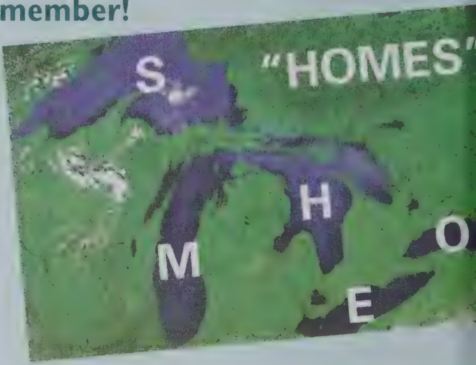


Take a (Healthy!) Walk

- Walk briskly for about 30 minutes every day.
- Swinging your arms will help you walk faster.
- Bend your elbows instead of letting your arms hang down.
- Push off with the balls of your feet and take quicker steps instead of longer ones.
- Keep your head, shoulders, hips, knees, and feet in line.

How to Remember

Practice these cool memory techniques and you'll be amazed at what you can remember!



1. Have to memorize a list? Make up an acronym from the first letter of each item. Let's say you want to remember the five Great Lakes (Michigan, Erie, Huron, Ontario, and Superior). Take the letters M,E,H,O,S and make a word with them—HOMES. Now, that's all you have to remember to trigger your memory of the five names.

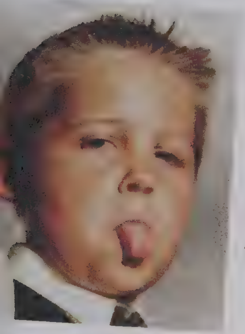
2. Make up a sentence. A second way to remember a list is to make a sentence up with words starting with those same letters. Something wacky is easier to remember. So your sentence for the Great Lakes could be

Mosquitoes **E**at **H**amburgers **O**n **S**unday.

3. Say it out loud. If you want to remember where you put your library book or where you left your bike lock key, say it out loud. You'll remember more easily later.

Don't Forget!
You'll find lots more fascinating facts, amazing stories, and fun activities at Almanac4kids.com. Check it out!

Funnies and Facts



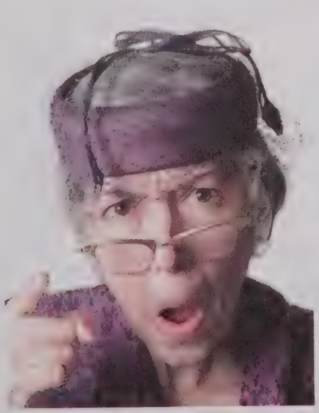
Broken Mirrors, Black Cats . . . Are You Superstitious?
- stories behind superstitions 160

So, That's the Way the Cookie Crumbles!
- facts about favorite foods 164

Twist Your Tongue, Limber Up Your Lips
- tongue twisters for fast talkers 166

Mind Your Manners!
- 18th-century etiquette 168

Which Animal Are You?
- the Chinese zodiac 170



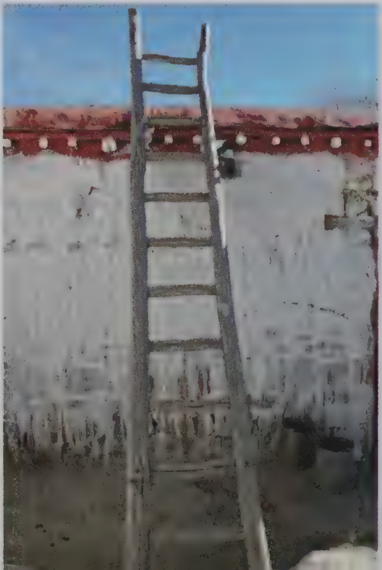
Broken Mirrors, Black Cats . . . Are You Superstitious?

Think you aren't superstitious? Think again. Nearly everyone has some little quirk or ritual to avoid bad luck or bring good luck. Human beings have been clinging to these beliefs for centuries, and psychologists say that superstitions may even help us cope with the events in our lives.

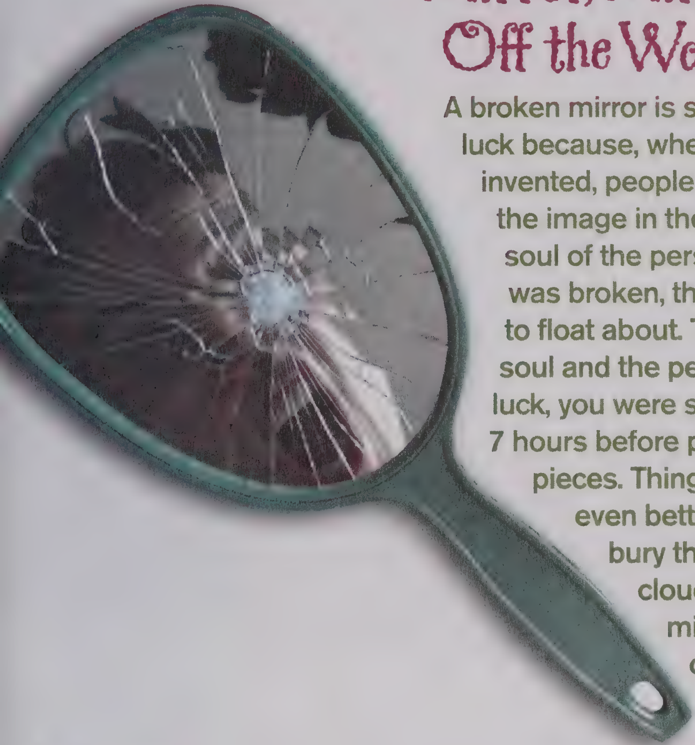
Some of the best-known superstitions have fascinating histories.

Watch Your Step

Ever worry about walking under a ladder? Long ago, when a criminal was sentenced to death, he was hanged from a high rung of a ladder. People thought that ghosts of criminals gathered under ladders and that passing under a ladder and through the ghosts brought bad luck. Even today, many people will walk around a ladder instead of under it.



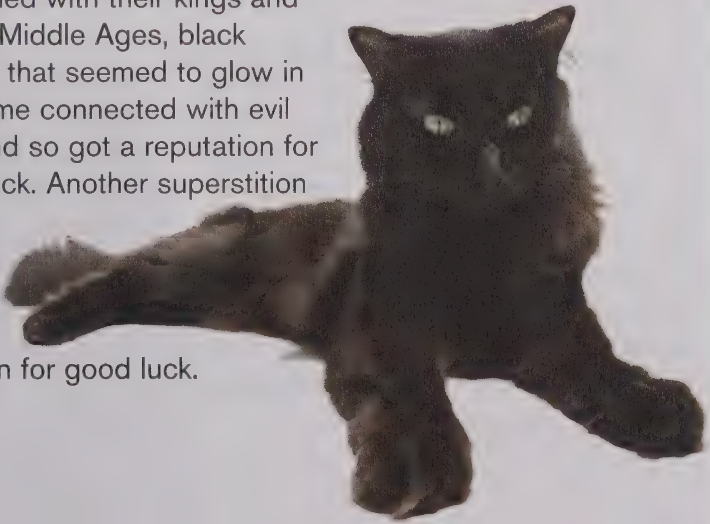
Mirror, Mirror, Off the Wall!



A broken mirror is said to bring bad luck because, when mirrors were invented, people thought that the image in the mirror was the soul of the person. If the mirror was broken, the soul was left to float about. To restore the soul and the person's good luck, you were supposed to wait 7 hours before picking up the pieces. Things would be even better if you could bury the pieces on a cloudy night at midnight in a cemetery.

Meow!

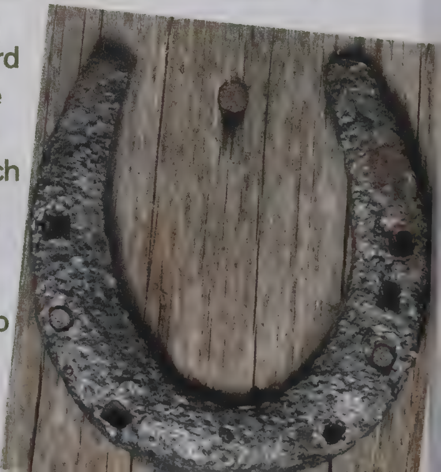
The ancient Egyptians treasured cats and even mummified them to be buried with their kings and queens. In the Middle Ages, black cats, with eyes that seemed to glow in the dark, became connected with evil and witches and so got a reputation for bringing bad luck. Another superstition says that if a black cat comes to you, you should take it in for good luck.

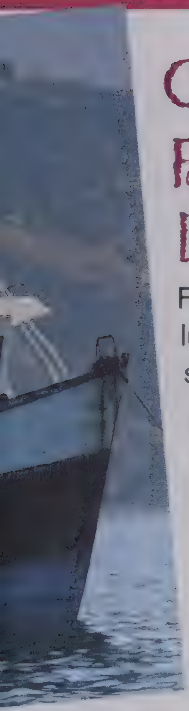


Horsing Around

Horseshoes are made of iron, a metal once thought to be lucky because the god of iron, Mars, was the enemy of the god of witches, Saturn.

Not all horseshoes are lucky, though. To be powerful, the shoe must be lost by a horse and found by you, with the open end pointing toward you. Tradition says that you then have to spit between the arms of the shoe and throw it over your shoulder. (Watch where you toss it. You'll have nothing but bad luck if it hits someone!) And be sure to hang your horseshoe on your wall with its ends pointing up—so the good luck won't spill out!





Going Fishing? Be Polite. The Fish Are Listening.

Fishermen have a boatload of superstitions, omens, and lucky charms to help them land the big ones and stay safe at sea. For instance . . .

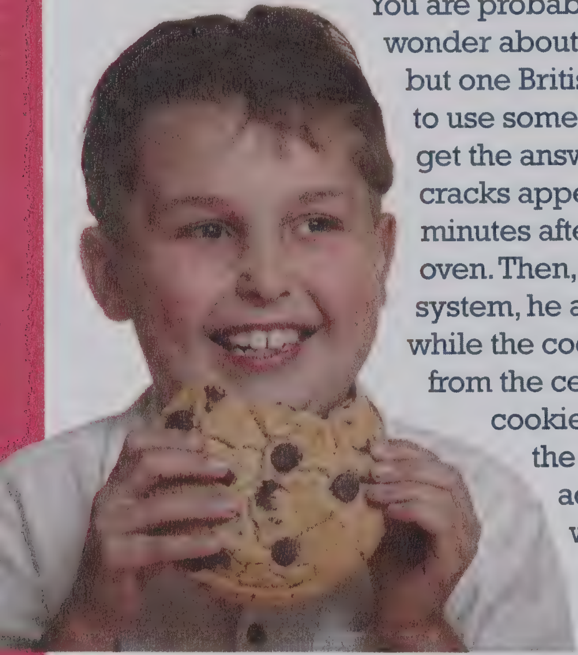
- If a cat purrs loudly when a boat is leaving, the fishermen will have a good catch. They say that a cat can smell fish from afar.
- A black cat that boards a boat of its own free will is considered good luck.
- A cat carries a gale in its tail and can bring on a storm by licking its fur the wrong way.

Many fishermen believe that fish don't like swearing and will swim away whenever they hear foul language. Others say that you must never eat a fish from the tail to the head. Bad luck will surely follow, if you do. Spitting on your hook and into the mouth of the first fish you catch will bring good luck, but spitting in the water will bring bad luck. And remember, if you eat the eyes of a fish, you will never be afraid of the dark.

A Foot or More

Rabbits, or at least their feet, are said to bring good luck because rabbits burrow underground and are fertile animals. Keep a rabbit's foot in your left back pocket or on a chain around your neck until it is old, dried up, and loaded with luck!

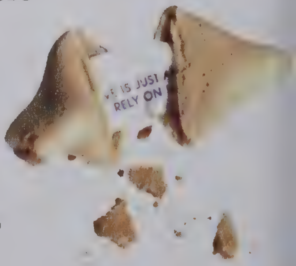
So, That's the Way the Cookie Crumbles!



You are probably too busy eating cookies to wonder about how they crack and crumble, but one British university student decided to use some sophisticated technology to get the answer. The student noticed that cracks appeared in his cookies a few minutes after he took them out of the oven. Then, using a digital imaging system, he and his friends observed that while the cookies cooled, moisture shifted from the center to the outside of the cookie. This built up stress around the outside, while the center actually shrank a bit. That's what caused the little cracks, and that's why, if cookies are packed or shipped, they often crumble.

Far East Meets West

You would think that Chinese fortune cookies were invented in China—but no! Some people in California claim that the crispy little tidbits were first served there in 1920. A restaurant cook mixed flour, egg whites, sugar, a little salt, vanilla extract, and a couple of drops of tea for taste and shaped the dough into hollow cookies, complete with a tiny piece of paper carrying a proverb or prophecy.



Who Put the Hole in the Doughnut?

Ever wondered who invented the doughnut? Some say that it happened by accident, when a Native American shot an arrow through a dough cake that a Pilgrim was frying over a fire. Other, more reliable reports say that, in 1847, a teenager named Hanson Crockett Gregory of Clam Cove, Maine, was watching his mother cook dough cakes in a large kettle of hot fat. He gobbled one of the first cakes out of the pot and declared that the center was soggy but the rest of it was just right. He then poked a hole through the center of the next one to get rid of the uncooked middle, and the doughnut was born.

Canny Thinkers

In the days before refrigeration, people did not have reliable ways to keep food fresh. In 1810, an Englishman named Peter Durand thought that he had solved the problem. He invented the tin can. Unfortunately, no one had devised a tool to open it!

For 48 years, people opened cans with chisels and hammers. Finally, Ezra Warner of Connecticut created the can opener. Whew!

Twist Your Tongue, Limber Up Your Lips

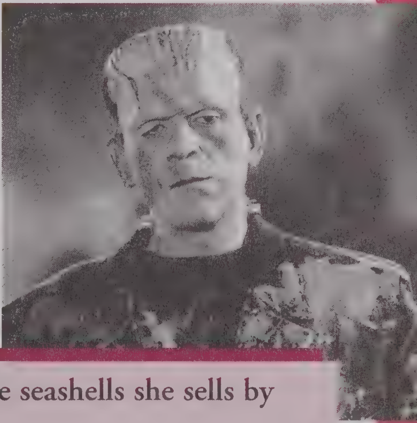
Tongue twisters are fun and, if you practice them enough, they can help you with your speaking skills. Here are a few. Try to say them five times fast.

Betty Botter bought a bit of butter. "But," she said, "this butter's bitter. If I put it in my batter, it will make my batter bitter. But a bit of better butter will make my batter better." So Betty Botter bought a bit of better butter, and it made her batter better.

The seething sea ceaseth and
thus the seething sea sufficeth us.

Three gray geese in the green grass grazing.
Gray were the geese and green was the grazing.

Moses supposes his toeses are roses, but
Moses supposes erroneously.
For Moses he knowses his toeses aren't
roses, as Moses supposes his toeses to be.



She sells seashells by the seashore. And the seashells she sells by the seashore are seashore shells, I'm sure.

—practiced by Boris Karloff, the original Frankenstein, to help cure his slight lisp

Theophilus Thistle, the thistle-sifter, sifted a sieve of unsifted thistles. If Theophilus Thistle, the thistle-sifter, sifted a sieve of unsifted thistles, where is the sieve of unsifted thistles Theophilus Thistle, the thistle-sifter, sifted?

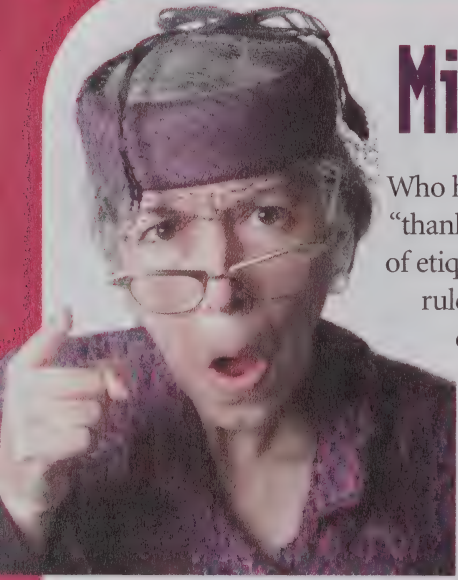
—believed to be the most difficult of all

The sixth sick sheik's sixth sheep's sick.

—the most difficult one-liner, according to the Guinness Book of World Records

Peggy Babcock

—one of the shortest tongue twisters



Mind Your Manners!

Who hasn't been told to always say "please" and "thank you"? It's one of the most important rules of etiquette, or manners, and it might be the only rule that will never go out of style. In the 18th century, parents bought books on manners for their children to read and memorize. Then and now, not having manners was considered rude.

Some of those 18th-century rules, shown here, have gone out of style because life has changed. Some are still in style—sort of. What rules of etiquette would you institute, based on life today? Share them with other kids at Almanac4kids.com/tellus.

- *Never speak to thy parents without some title of respect, Sir, Madam, etc.*
- *Grumble not, nor be discontented at anything thy parents appoint, speak, or do.*
- *When any speak to thee, stand up. Say not, "I have heard it before."*
- *Jog not the table or desk on which another writes.*
- *Do not pass between the fire and the persons sitting at it.*
- *Spit not in the room, but in the corner and rub it with thy foot.*
- *Kill no vermin as fleas, lice, ticks, etc., in the sight of others.*

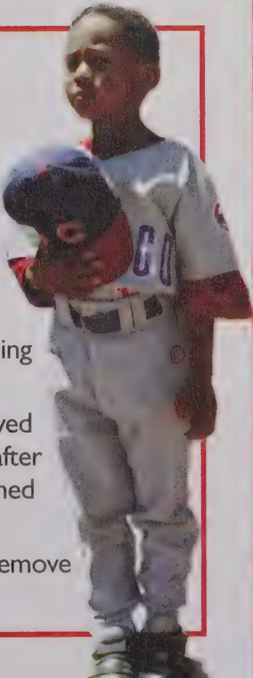
- *Find no fault with any food that is given thee.*
- *Dip not thy meat in the sauce.*
- *Take not salt with a greasy knife.*
- *Spit not, cough not, nor blow thy nose at the table if it may be avoided.*
- *Stuff not thy mouth so as to fill thy cheeks, but be content with smaller mouthfuls.*
- *Blow not on thy meat, but with patience wait until it be cool.*
- *Pick not thy teeth at the table unless holding thy napkin before thy mouth with thine other hand.*

Hats Off! (and On and Off and On . . .)

There was a time when almost everybody wore a hat, and everyone knew the manners that went with one.

- A man always tipped his hat when he passed a woman on the street, and he removed his hat as soon as he came indoors.
- A woman could keep her hat on indoors during the day, unless she was at home. She never wore a hat with an evening gown, but wore one with a suit or dress, if it matched.
- Timing was important, too. Daytime hats had to be removed by dusk. Summer hats, especially straw hats, could be worn after May 15, and only until September 15, when everyone switched to felt.

Today, life is much simpler. You only have to remember to remove your baseball cap when the national anthem is played.



Which Animal Are You?

Unlike the Western zodiac, which consists of 12 signs in one year, the Chinese zodiac has one sign every year for 12 years. Your birth year determines your animal sign and Chinese zodiac profile. Use the list below to find information about past, present, and future Chinese zodiac years.

RAT 1960, 1972, 1984, 1996, 2008

Ambitious and sincere, you are generous. You get along well with the dragon and the monkey.

OX or BUFFALO

1961, 1973, 1985, 1997, 2009

You are bright, cheerful, and a good leader. You get along with the snake and the rooster.

TIGER 1962, 1974, 1986, 1998, 2010

You are straightforward, sensitive, and brave. The horse and the dog are your friends.

RABBIT or HARE

1963, 1975, 1987, 1999, 2011

Talented and affectionate, you like the quiet life. You get along well with the sheep and the pig.

DRAGON 1964, 1976, 1988, 2000, 2012

Passionate and healthy, your life is complex. You are compatible with the monkey and the rat.

SNAKE 1965, 1977, 1989, 2001, 2013

Strong-willed and intense, you are also wise. You get along well with the rooster and the ox.

HORSE 1966, 1978, 1990, 2002, 2014

You are attractive and popular. You get along best with the tiger and the dog.

SHEEP or GOAT

1967, 1979, 1991, 2003, 2015

Artistic and stylish, you enjoy privacy. You are compatible with the pig and the rabbit.

MONKEY 1968, 1980, 1992, 2004, 2016

Intelligent, skillful, and persuasive, you strive to do well. The dragon and the rat are compatible with you.

ROOSTER 1969, 1981, 1993, 2005, 2017

You seek wisdom and truth and are a pioneer. You are compatible with the snake and the ox.

DOG 1970, 1982, 1994, 2006, 2018

Generous and loyal, you work well with others. You get along best with the horse and the tiger.

PIG 1971, 1983, 1995, 2007, 2019

Noble and kind, you attract and keep friends. You are compatible with the sheep and the rabbit.

Useful Things

How to Find the Day of the Week for Any Date 172

The Richter Earthquake Scale 174

UV Risk and Safe Ice charts 175

Tables and Tricks for Measuring 176

Metric Conversions 177

Do You Live in Feast of Flowers?
- state and province histories 178

How Your Favorite Sports and Games Started
- brief histories 182

Sports Halls of Fame
- addresses and Web sites 184

How to Find the Day of

On what day of the week were you born? Here is a way to find that day or any given date as far back as the mid-1700s. For example, what day of the week was December 26, 2004, when the tsunami struck in the Indian Ocean? Follow the example on the right as you read along:

a. Take the last two digits of the year.
b. Add to that one-quarter of those two digits (discard any remainder).
c. Add to that the day of the month and the Month Key number for that month.
d. The date is after 2000, so subtract 1.*
e. Divide the result by 7.

Month Key

January	1	June	5
leap year	0	July	0
February	4	August	3
leap year	3	September	6
March	4	October	1
April	0	November	4
May	2	December	6

Monday's child
is fair of face,

Tuesday's child
is full of grace,

Wednesday's child
is full of woe,

Thursday's child
has far to go,

–an old English nursery rhyme

the Week for Any Date

The remainder is the day of the week: 1 is Sunday, 2 is Monday, etc. If there is no remainder, the day is Saturday.

a. Take the last two digits of the year (04): 4
b. Add one-quarter of those two digits (1): 1
c. Add the day of the month to the Key number (26+6=32): 32
37
d. Subtract 1: –1
36
e. Divide the result by 7 (36÷7=5 with a remainder of 1)

Sunday is 1, and that's the day of the week on which the tsunami occurred.

* For dates from 2000 to 2099, subtract 1 before dividing. For dates from 1901 to 1999, just divide. For dates before 1900, add 2 to the sum before dividing. For dates before 1800, add 4. The formula doesn't work for days before 1753.

Friday's child is
loving and giving,

Saturday's
child works hard
for a living,

And the child that
is born on the
Sabbath Day,
Is bonny and blithe
and good and gay.

The Richter Earthquake Scale

The Earth trembles beneath us (in different places, thank goodness) several million times a year. In 1935, American geologist Charles W. Richter developed this scale to measure the magnitude of an earthquake.

Magnitude	Possible Effects
1	Detectable only by instruments
2	Barely detectable, even near the epicenter
3	Felt indoors
4	Felt by most people in the area; slight damage
5	Felt by all; minor to moderate damage
6	Moderate destruction
7	Major damage
8	Total destruction and major damage

Your Ultraviolet Radiation Risk

When you listen to daily weather reports, you will usually hear mention of the day's UV risk. To avoid harming your skin and perhaps developing skin cancer later in life, you should learn what the numbers mean and what precautions you should take. This chart applies to people with fair skin that sometimes tans, but often burns. People with light skin should be more cautious. People with darker skin may be able to take more exposure.

UV Number	Exposure Level	Time to Burn	Actions to Take
0, 1, 2	Minimal	60 minutes	Use SPF 15 sunscreen
3, 4	Low	45 minutes	Use SPF 15, wear hat
5, 6	Moderate	30 minutes	Use SPF 15, wear hat
7, 8, 9	High	15–25 minutes	Use SPF 15-30, wear hat and sunglasses
10 +	Very high	10 minutes	Use SPF 30, wear hat, sunglasses, and protective clothing

Safe Ice

Use this chart to gauge whether ice is safe to walk or ride on. These figures apply to solid blue or black pond or lake ice. River ice is 15 percent weaker.

Ice Thickness	How Much It Can Hold
3 inches	Single person on foot
4 inches	Group in single file
7½ inches	Passenger car
8 inches	Light truck
12 inches	Heavy truck

Tables and Tricks for Measuring

Guesstimate!

If you are stuck without a ruler use these handy substitutes. Memorize this list or keep a copy in your backpack.

Library card	3⅜ x 2⅛ inches	Quarter (diameter)	1 inch
Floor tile	12 inches square	Penny (diameter)	¾ inch
Dollar bill	6⅛ x 2⅝ inches	Sheet of computer paper	8½ x 11 inches

1 foot = the length of an average adult's foot

1 yard = the distance from an average adult's nose to the fingertips of his outstretched arm

A golf ball = about a 1-ounce piece of meat or cheese

A deck of cards = a 3- to 4-ounce piece of meat

The first joint of your smallest finger = about 1 teaspoon

Metric Conversions

Imperial vs. Metric

1 inch = 2.54 centimeters
1 centimeter = 0.39 inch
1 yard = 0.914 meter
1 meter = 39.37 inches
1 mile = 1.61 kilometers
1 kilometer = 0.62 mile

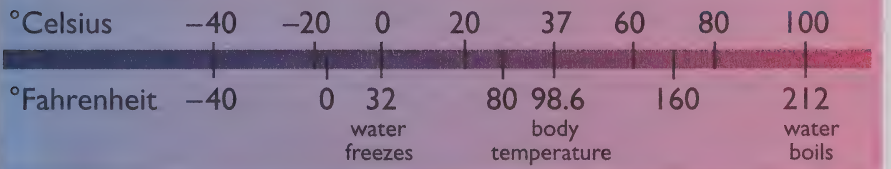
1 acre = 0.40 hectare
1 hectare = 2.47 acres

1 teaspoon = 5 milliliters
1 tablespoon = 15 milliliters
1 cup = 250 milliliters
1 ounce = 28.349 grams

1 gram = 0.035 ounce
1 pound = 0.45 kilogram
1 kilogram = 2.2 pounds

1 U.S. liquid quart = 0.946 liter
1 liter = 1.057 U.S. liquid quarts
1 U.S. liquid gallon = 3.78 liters

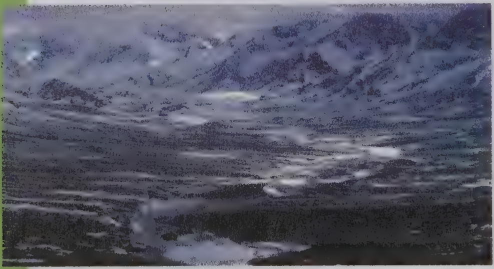
Temperature Conversion Scale


°Celsius
–40
–20
0
20
37
60
80
100
°Fahrenheit
–40
0
32
water freezes
80
98.6
body temperature
160
212
water boils

Do you live in Feast of Flowers? Or Big Water? Maybe you're from Swift-flowing River?

You might be surprised to learn about the name of your state, province, or territory.

Alabama was named by the French after a local Native American tribe. Its name means "tribal town."



Alaska is an Aleut word meaning "great land" or "big country."

Arizona is a combination of "arid" and "zone" or the Spanish *arido zona*, which means "dry place."

Arkansas was named after a Native American tribe called the Arkansea. The French called it Arkansas with a silent "s."

California is probably named after a mythical land, Califia, in an early 16th-century Spanish novel.

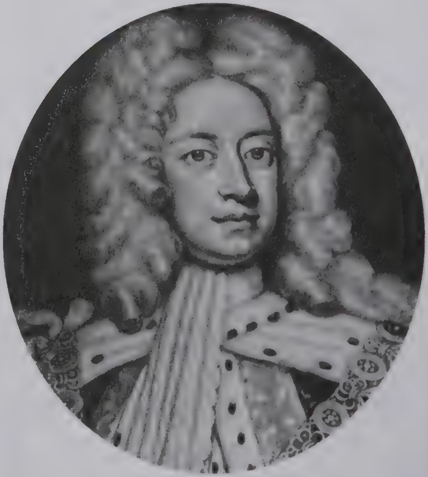
Colorado was named for the Colorado River; the Spanish word means "ruddy" or "red."

Connecticut is a Native American word for "at the long estuary."

Delaware was named after Lord De La Warr, a governor of the colony of Virginia.

Florida was a name chosen by explorer Ponce de Léon and is Spanish for "feast of flowers."

Georgia was named for King George II of England *(below)*.



Hawaii most likely derives from *Havaiki*, the word for the ancient homeland of the Polynesians.

Idaho is derived from a Shoshonean greeting meaning "good day."

Illinois is a French version of a Native American tribe named the Iliniouek. It means "man."

Indiana was named for Native American "Indians" by the Indiana Company, which had land in the area.

Iowa is from a Native American word meaning "beautiful land."

Kansas is named after the Kansa tribe whose name means "people of the south wind."

Kentucky comes from the Iroquois word *kenta-ke*, meaning "meadowland."

Louisiana was named for King Louis XIV of France.

Maine signifies a principal place, possibly to distinguish the mainland from the many offshore islands.

Maryland was named after Henrietta Maria, the wife of King Charles I of England.

Massachusetts was named for a Native American tribe and a village. The word means "big hill people."

Michigan is from the Native American word *michiguma*, meaning "big water."

Minnesota is a Sioux word meaning "cloudy water."

Mississippi is probably from the Algonquin *miss*, meaning "big," and *sipi*, meaning "river."

Missouri is named after the *Missouri* tribe. The name means "town of the large canoes."

Montana was named from the Spanish word for mountain.

Nebraska is a Native American word meaning "flat water."

Nevada means "snowy" in Spanish.

New Hampshire was named after Hampshire, England, the home of Captain John Mason, who acquired the land.

(continued)

New Jersey was named for the British Isle of Jersey.

New Mexico was named after Mexico, which was named for Mexitili, an Aztec god.

New York was named to honor York, England.

North Carolina derives from the Latin word *Carolus*, meaning Charles, in honor of King Charles I of England.

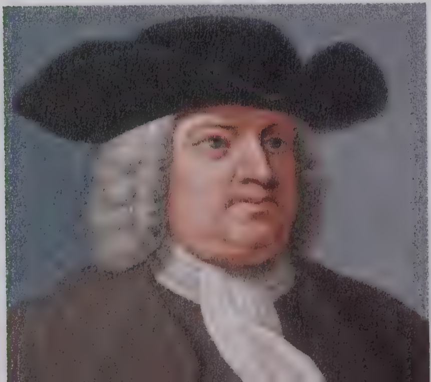
North Dakota was named for the Sioux word for its federated tribes—*Dakota*, which means "allies."

Ohio was named for the Iroquois word meaning "fine river" or "fine road."

Oklahoma is from *okla* and *homa*, Choctaw words meaning "red people."

Oregon has eight possible meanings, but it's probably a Native American word for a western river.

Pennsylvania was named for William Penn *(below)*, with a Latin suffix meaning "forest."



Rhode Island was named either for the Mediterranean island of Rhodes or for the Dutch *roode eyland*, meaning "red island."

South Carolina is like North Carolina.

South Dakota is like North Dakota.

Tennessee is a Cherokee word of uncertain meaning.

Texas is likely from the old Native American greeting *tehias*, meaning "friends."

Utah was named by Congress after the Ute tribe and means "people of the mountains."

Vermont is probably from the French words for "green mountains."

Virginia was originally named Wingina after a local chief, then renamed by Elizabeth I of England in honor of herself, the "Virgin Queen."

Washington is named in honor of President George Washington.

West Virginia is like Virginia.

Wisconsin is a Chippewa word meaning "grassy place."

Wyoming is from a Delaware tribal word, *meche-weami-ing*, meaning "at the big flats."

Where did we get "Canada"?

When French explorer Jacques Cartier heard aboriginal youths speak of *kanata*, he thought they were referring to the entire region surrounding the St. Lawrence River. But they were directing him to Stadacona, a Huron village where Quebec City now stands. *Kanata* is the Huron-Iroquois word for "settlement." After Confederation in 1867, "Canada" became the official name for the country.

Newfoundland and Labrador was originally called "new founde isle" by John Cabot in 1497. The island later became "New Found Launde." Labrador is most probably derived from the Portuguese *lavrador*, meaning "landholder,"after Joao Fernandes an explorer from the Azores.

Nova Scotia was originally called Acadia by the French, possibly from the Micmac word *quoddy*, meaning "piece of land." It later became Nova Scotia, or New Scotland.

New Brunswick was named to honor King George III of England, who was descended from the House of Brunswick.

Prince Edward Island was named for Prince Edward, Duke of Kent, father of Queen Victoria.

Quebec is an Algonquin word meaning "narrow passage" or "strait."

Ontario is likely from the Native American word *onitariio*, meaning "beautiful lake," or *kanadario*, meaning "sparkling water."

Manitoba is either of Assiniboine origin from the words *mini* and *tobow*, meaning "lake of the prairie," or from the Cree *maniotwapow*, which referred to a Cree superstition about the roaring sound produced by pebbles on a beach on Manitoba Island.

Saskatchewan is from the Cree words first applied to the river, *Kisiskatchewanisipi*, meaning "swift-flowing river."

Alberta was named in honor of Princess Louise Caroline Alberta, daughter of Queen Victoria.

British Columbia was named after the Columbia River by American captain Robert Gray.

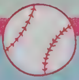
Nunavut is from the Inuktitut word meaning "our land."

Northwest Territories is named for its remote geographic location, the land north and west of Lake Superior.

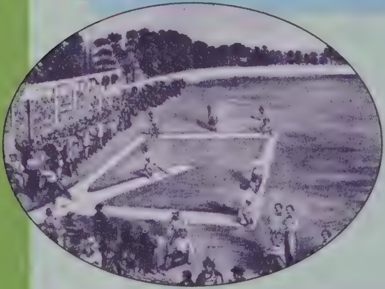
Yukon Territory was named after the river, from the Native American word *yu-kun-ah*, meaning "great river."

How Your Favorite Sports and Games Started

BASEBALL



Now the national sport of the United States, baseball is derived from the British games of cricket and rounders. The first World Series was held in 1903.



BOWLING

Anthropologists think bowling started in Egypt more than 5,000 years ago, which makes it one of the oldest sports. It probably came to America with Dutch settlers in the 1600s.

BOXING

The ancient sport of boxing began in Sumeria about 5,000 years ago. Gloves were first used in England in the 1700s.

CHECKERS

Evidence suggests that the ancient Egyptians played checkers. The first written reference to the game was made by a Spaniard in 1547.

CHESS

This game probably started in India sometime around 500 A.D. In the 11th century, Arabs played it blindfolded!

CURLING

Scotland gave birth to this sport in the 1500s. The first Canadian curling club was founded in 1807 by Scottish settlers in Montreal. The first U.S. club was established in Michigan in 1832.

FIELD HOCKEY

Popular today in 70 countries, field hockey likely originated in Persia about 4,000 years ago.

FOOTBALL

The early U.S. game grew out of soccer and rugby. The first official game was played between Princeton and Rutgers universities in 1869.

GOLF

Golf originated in Scotland in the 1400s, but was outlawed for many years because it interfered with the army's archery practice.

ICE HOCKEY

Some say that ice hockey evolved from field hockey in Northern Europe about 500 years ago. Others believe it started in Canada in the mid-1800s. By 1885, the first organized ice hockey league had been formed in Ontario. The first U.S. game was played in 1893 between Yale and Johns Hopkins universities.

ICE SKATING

The first U.S. skating club was formed in Philadelphia in 1849. American Jackson Haines introduced figure skating in Vienna in 1864.

LACROSSE

It grew from a Native American game called baggataway, used to train warriors for endurance.

RUGBY

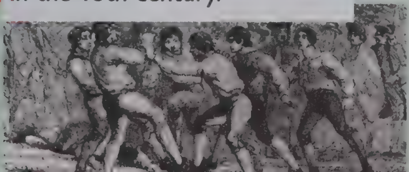
In 1823, during a soccer game at Rugby School in England, a frustrated player snatched the ball and ran with it, inventing a new game.

CROSS-COUNTRY SKIING

Cross-country skiing developed as a means of getting around, but became a sport in the 1800s.

SOCCER

Now the world's most popular sport, it originated in England in the 13th century.



SOFTBALL

Developed in Chicago in 1888, it was first called "kitten" or "mush" ball.

SWIMMING

The first English swim meet took place in 1837. Fancy diving began in Sweden and Germany in the 1600s.

TABLE TENNIS

Developed by the British army in India in the 1890s, it was first called "Ping-Pong."

TENNIS

Tennis began in its present form in England in the 1870s. The first Wimbledon Championship was held in England in 1877.

VOLLEYBALL

In 1895, an instructor at the YMCA in Holyoke, Massachusetts, invented volleyball for businessmen who wanted a sport with less physical contact than basketball.

Sports Halls

Here are the shrines where you can go to worship your favorite games and players. If you can't get there in person, try the Web sites. They are loaded with information and fun facts.

Baseball

National Baseball Hall of Fame and Museum
25 Main St.
Cooperstown, NY 13326
www.baseballhalloffame.org

Canadian Baseball Hall of Fame & Museum
386 Church St. South
Saint Mary's, ON N4X 1C2
www.baseballhalloffame.ca

Basketball

Naismith Memorial Basketball Hall of Fame
1000 West Columbus Ave.
Springfield, MA 01105
www.hoophall.com

Women's Basketball Hall of Fame
700 Hall of Fame Dr.
Knoxville, TN 37915
www.wbhof.com

Football

College Football Hall of Fame
111 South St. Joseph St.
South Bend, IN 46601
www.collegefootball.org

Pro Football Hall of Fame
2121 George Halas Dr. NW
Canton, OH 44708
www.profootballhof.com

Canadian Football Hall of Fame & Museum
58 Jackson St. West
Hamilton, ON L8P 1L4
www.footballhof.com

Golf

World Golf Hall of Fame
1 World Golf Place
St. Augustine, FL 32092
www.wghof.org

# of Fame

Hockey

U.S. Hockey Hall of Fame
801 Hat Trick Ave.
P.O. Box 657
Eveleth, MN 55734
www.ushockeyhall.com

Hockey Hall of Fame
BCE Place, 30 Yonge St.
Toronto, ON M5E 1X8
www.hhof.com

Soccer

National Soccer Hall of Fame
and Museum
18 Stadium Circle
Oneonta, NY 13820
www.soccerhall.org

Swimming

International Swimming Hall of Fame
One Hall of Fame Dr.
Fort Lauderdale, FL 33316
www.ishof.org

Tennis

International Tennis Hall of Fame
194 Bellevue Ave.
Newport, RI 02840
www.tennisfame.org

Track & Field

The National Track & Field Hall of Fame
216 Fort Washington Ave.
New York, NY 10032
www.trackhall.com

Volleyball

Volleyball Hall of Fame
444 Dwight St.
Heritage State Park
Holyoke, MA 01040
www.volleyhall.org

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MSSS–Malin Space Science Systems
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NASA/JPL–NASA Jet Propulsion Laboratory
NASA/JSC–NASA Johnson Space Center
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NOAA–National Oceanic and Atmospheric Administration Central Library
NPS–National Park Service
NSSDC–National Space Science Data Center
PG/GI–Photodisc Green/Getty Images
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USGS–United States Geological Survey
UVL–University of Vermont Library

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CHAPTER THREE: On the Farm
47: (Top and middle) IS. (Bottom) AFP/GI. 48: IS. 49: Tim Flach/GI. 50–51: (Both) IS. 52: (Top) IS. 54: IS. 55: (Top) Bob Elsdale/GI. (Bottom) Andy Sacks/GI. 56: (Top and bottom) IS. 57: (Top) GI. (Bottom) AFP/GI. 58: (Left) Stephen Simpson/GI. (Right) GI. 59: Mike Hill/GI. 60: (All) IS.

CHAPTER FOUR: Gardening
61: (Top) Michael Melford/GI. (Bottom) ML/DZ. 62: (Girl) Francesca Yorke/GI. 62–63: (Flies) IS. 63: (Venus flytraps) Steve Hopkin/GI. (Pitcher plants) Lillian Elaine Wilson/GI. 64: (All foreground) IS. 65: (Right foreground) Oliver Strewe/GI. 66: (Foreground) Courtesy of Rick Nesbitt/www.cathyscomposters.com. 67: (Top foreground) Maryellen Baker/GI. (Bottom foreground) IS. 68: IS. 69: (Top) Michael Melford/GI. (Bottom) IS. 70: (Mr. Potato Head) Time Life Pictures/GI. 70–71: (Brown potatoes) IS. 71: (French fries) IS. (Klondike) GI. (Potato varieties) Evan Sklar/GI. 72–73: (All) ML/DZ. 74: (Top) Photo by Scott Bauer, Agricultural Research Service/United States Department of Agriculture. (Bottom) IS. 75: Tobi Corney/GI. 76: (Top) IS. (Bottom) Stan Osolinski/GI.

CHAPTER FIVE: History
77: (Top) GI. (Bottom) NFPL. 78: (Bottom foreground) Library of Congress, Prints & Photographs Division, HABS, HABS NY, 60-SOM, 1-1. 80: GI. 81: Circus World Museum, Baraboo, Wisconsin, Sid-N45-Chang&Eng-1. 82: NFPL. 83: (Top) NFPL. (Bottom) Doug Armand/GI. 84: (Foreground) H. Nelson Jackson Papers, Special Collections, UVL. 84–85: (Background) IS. 85: (Foreground) H. Nelson Jackson Papers, Special Collections, UVL. 86: (Foreground) NPS Photo. 86–87: (Background) Moritz Steiger/GI. 87: (Top foreground) Michael Townsend/GI. (Bottom foreground) NPS Photo. 88: USGS. 89: (Top) Mark Lellouch/NPS. (Bottom) J.K. Hillers/USGS. 90: (Top, second and third) J.K. Hillers/USGS. (Fourth) NPS Photo.

CHAPTER SIX: Nature and Outdoors

91: (Top) Siede Preis/PG/GI. (Bottom) Skip Brown/NGIC/GI. 92: (Trout) Jules Frazier/PG/GI. (Illustration) Courtesy of Gil Martinez. 92–93: (Fishing rod) Stuart Westmorland/GI. 93: (Bass) Lawrence M. Sawyer/PG/GI. (Fishing bobber) Comstock Images/GI. 94: (Illustration) Lisa Berkshire/TW/GI. (Wheelbarrow) RF/C. 94–95: (Earthworm) Dorling Kindersley/GI. 95: (Mass of earthworms) Wally Eberhart/GI. 96: (Background) IS. (Foreground) Dr. David M. Phillips/GI. 97: IS. 98: (Left foreground) Darlyne A. Murawski/NGIC/GI. (Right foreground) James Cotier/GI. 98–99: (Background) C. (Bottom foreground) David Burder/GI. 99: (Top foreground) Geostock/PG/GI. (Bottom foreground) Burke/Triolo Productions/Brand X Pictures/GI. 100: (Top foreground) Lee Karney/USFWS. (Middle foreground) Altrendo Nature/GI; (Bottom foreground) George F. Mobley/NGIC/GI. 100–101: (Background) Martin Ruegner/GI. 101: (Top and bottom foreground) Lee Karney/USFWS. (Middle foreground) IS. 102: (Top) Micheal Simpson/GI. (Bottom) Siede Preis/PG/GI. 103: Debra McClinton/GI. 104: (Top) Jeffrey Sylvester/GI. (Bottom) Stephen Frink/GI. 105: (Top) Anup Shah/GI. (Bottom) Theo Allofs/GI. 106: (Bottom foreground) IS. 107: (Top foreground, left to right) Tom Walker/GI, Skip Brown/NGIC/GI, Darrell Gulin/GI, Michael S. Quinton/NGIC/GI. (Bottom foreground, all) Courtesy of Erick Ingraham. 108: (Top foreground, left to right) Gary Kramer/USFWS, Daniel J. Cox/GI, Philip Schermeister/NGIC/GI, Joel Sartore/NGIC/GI. (Bottom foreground, all) Courtesy of Erick Ingraham.

CHAPTER SEVEN: Pets

109: (Top) IS. (Bottom) GH/VH/GI. 110: (Top) Catherine Ledner/GI. (Bottom) Michael Kraft/GI. 111: (Top) Eastcott Momatiuk/GI. (Bottom) Tim Davis/GI. 112–113: (All) Courtesy of Friends of Jim/www.jimthewonderdog.com. 114: (Background) IS. (Top foreground) Texas Parks & Wildlife Department © 2005. (Bottom foreground) Courtesy of Eastland (Texas) Chamber of Commerce. 114–115: J.H. Pete Carmichael/GI. 115: (Background) IS. (Foreground) Courtesy of Eastland (Texas) Chamber of Commerce. 116: (Top foreground) Neil Snape/GI. (Bottom foreground) GI. 116–117: (Background) Stuart Westmorland/GI. 117: (Foreground) Military History, Smithsonian Institution. 118: (Bottom) Sean Murphy/GI. 119: (Top) IS. (Bottom) Dave King/GI. 120: (Top) Dorling Kindersley/GI. (Bottom) Jane Burton/GI. 121: Alison Miksch/F/GI. 122: (Top) Kim Heacox/GI. (Bottom) Larry Grant/GI. 123: (Both) IS. 124: (Top) IS. (Bottom) Peter Cade/GI. 125: (Top) IS. (Middle, left to right) Tracy Morgan/GI, Dave King/GI. (Bottom, left to right) GH/VH/GI, Chris Hackett/GI, Renee Lynn/GI. 126: (Cat ears) Diane Padys/GI. (Cat in tree) IS. (Orange cat) GDT/GI. (Cat eyes) IS. (Sleeping cat) Linda Burgess/GI. 127: (Top and bottom) GH/VH/GI. (Middle) Amy Neunsinger/GI. 128: (Both) IS.

CHAPTER EIGHT: Sports

129: (Top) NBHOFL. (Bottom) GI. 130: Basketball Hall of Fame. 131: (Top and bottom) GI. 132: (Top) Hockey Hall of Fame. (Bottom) GI. 133: (Top) GI. (Bottom) Hockey Hall of Fame. 135: MLB Photos/GI. 136: MLB Photos/GI. 137: NBHOFL. 138: (All) GI.

CHAPTER NINE: Health

139: (Top) Tom Hussey/GI. (Bottom) Peter Cade/GI. 140: (Top) Tom Hussey/GI. (Bottom) Gandee Vasan/GI. 141: (Background) Nicholas Veasey/GI. (Top foreground) Paula Hible/F/GI; (Bottom foreground) John Turner/GI. 142: (Top) Jeff Titcomb/GI. (Bottom) Christoph Wilhelm/GI. 143: (Top) Lifestock/GI. (Bottom) IS. 144–145: (Lambs) Bob Elsdale/GI. (Sleeping girl) Photos by James Horne, Rapt Photography. 145: (Illustration) Lisa Berkshire/TW/GI. 146: (Top) Donald E. Carroll/GI. (Bottom) Peter Cade/GI. 147: (Top) Joel Sartore/NGIC/GI. (Middle) IS. (Bottom) Ericka McConnell/GI. 148: (Both) IS. 149: (Top) IS. (Bottom) Howard Kingsnorth/GI. 150: (Top left) Angela Wyant/GI. (Top right) Robin MacDougall/GI. (Bottom left) Leigh Beisch/F/GI. (Bottom right) Rita Maas/GI. 151: (Top left) Brooke Slezak/GI. (Top right) Mike Brinson/GI. (Middle) Greg Ceo/GI. (Bottom) Chris Thomaidis/GI. 152: (Top to bottom) Burke/Triolo Productions/F/GI, Sang An/F/GI, Lars Klove/GI, IS. 153: (Top) IS. (Bottom) Bettmann/C. 154: (Both) IS. 155: (First aid kit) IS. (Oatmeal) IS. (Mosquito) Darlyne A. Murawski/NGIC/GI. (Onion) Dave King/GI. 156: Library of Congress, Prints & Photographs Division, LC-USZ62-74752. 157: (Top left) IS. (Top right) Mike Powell/GI. (Middle left) Duncan Smith/GI. (Middle right) Eric Bean/GI. (Bottom) Antonio Mo/GI. 158: G. Leshkevich/Great Lakes Environmental Research Laboratory.

CHAPTER TEN: Funnies and Facts

159: (Top) Christian Lantry/GI. (Bottom) IS. 160–163: (All) IS. 164: (Top) IS. 165: (Bottom) IS. 166: (Top) IS. (Bottom) Gary Brettnacher/GI. 167: (Top) GI. (Middle and bottom) IS. 168: (Top) IS. (Bottom) Christian Lantry/GI. 169: (Top) IS. (Bottom) MLB Photos/GI. 170: (Left to right) David W. Hamilton/GI, Tom Bean/GI, IS, David Aubrey/GI, IS.

CHAPTER ELEVEN: Useful Things

171: (Top) GI. (Bottom) AFP/GI. 172–173: GI. 174: AFP/GI. 175: (Top) IS. (Bottom) Greg Ceo/GI. 176: Kim Steele/GI. 177: (Bottom) Jody Dole/GI. 178: (Top) USFWS. (Bottom) GI. 179: (Top) GI. (Bottom) O. Louis Mazzatenta/NGIC/GI. 180: GI. 182: GI. 183: (Bottom left) GI. (Top right) Mike Powell/GI. (Middle right) IS. (Bottom right) GI. 184: (Top) Courtesy of the NBHOFL. (Bottom) Courtesy of the World Golf Hall of Fame. 185: Courtesy of the International Tennis Hall of Fame.

186: MLB Photos/GI.

192: Jeff Titcomb/GI.

Index

A

acid rain, 30
animal tracks, 106–108
aurora australis, 15
aurora borealis, 14–15

B

Bailey, Hachaliah, 78–79
baseball, 134–137, 182, 184
basketball, 130–131, 184
bears, 108
Beaufort Wind Scale, 26
beavers, 107
Big Dipper, 16
birds, 76, 100–101
blueberries, 152
blue Moon, 11
bones, human, 143
bowling, 182
boxing, 182
brain, human, 140, 152–153
Bunker, Chang and Eng, 80–81
burns, 154
butterflies, 76

C

cabbage, 30, 154
calories, 151
can openers, 165
carrier pigeons, 116–117
cars, 84–85
cats
  activities, 127
  body language, 127
  breeds, 127
  heroism, 110
  pet shows, 119
  poisonous plants, 122
  superstitions, 161
cattle, pet shows, 121
checkers, 182
chess, 182
chickadees, 100–101
chicken eggs, 52–53, 60
chickens, 52, 60, 120
clouds, 10, 28–29
colonial America, 69
Colorado River, 88–90
comets, 19
compass, directions, 16–17
compost, 64–65
composting, 65, 66–67
cookies, 164
Coolidge, Calvin, 115
cow milk, 50–51
cow patties, 49
cows, 48–51, 60, 121
crickets, 46, 99
Crocker, Sewall, 84–85
Crowninshield Elephant, 78
curling, 182

D

day of the week, 172–173
Death Valley, California, 21, 35, 86–87
deer, 107
desert, 86–87
Dill, Howard, 68
Dill's Atlantic Giant, 68
dogs
  activities, 124–125
  body language, 124
  breeds, 123, 125
  heroism, 110
  pet shows, 118
  supernatural powers, 112–113
dolphins, 104
doughnuts, 165
dust mites, 98

E

ears, human, 141
earthquakes, 174
earthworms, 66, 94–95
eclipse, solar, 18
eggs, 52–53
Einstein, Albert, 140, 153
elephants, 78–79
El Niño, 25
etiquette, 168–169
eyes, human, 141

F

feet, human, 157
fertilizer, 64–65, 66–67, 94–95
field hockey, 182
finches, 100–101
fish
  characteristics, 92–93
  eating, 152
  pet shows, 119

fishing, 92–93, 163
flies, 96–97, 99
flowers, 76
Flutie, Doug, 138
football, 182, 184
fortune cookies, 164
foxes, 107
french fries, 71
frogs, 102–103
fruit flies, 96–97

G

Gandhi, Mahatma, 59
gardening, 65–76
  companions, 72–73
  giant pumpkins, 68–69
goat milk, 58–59
goats, 58–59, 60
gold rush, 71, 87
golf, 182, 184
Grand Canyon, 88–89

H

hail, 32–33
hair, human, 140
Halley's Comet, 19
halls of fame, 111, 184–185
Hamm, Mia, 138
hares, 107
Harvest Moon, 13
heart, human, 143
heat index, 36
Henderson, Rickey, 138
hens, 52–53, 60
hibernation, 105
hiccups, 148–149
hockey, 132–133, 183, 185
hogs, 54–57, 60
home remedies, 154–155
homing pigeons, 116–117
horse, heroism, 111
Horseshoe Falls, 82–83
horseshoes, 162
houseflies, 96
house spiders, 99
human body, 140–143
Humane Society, 111
humidity, 36
hummingbirds, 76
hunter spiders, 99
hurricanes, 25–27
hypnotism, 102–103

I

ice, safe, 175
ice hockey, 132–133, 183, 185
ice skating, 183
Incas, 25, 70

J

jack-o'-lanterns, 69
Jackson, Dr. Horatio Nelson, 84–85
Jefferson, Thomas, 31, 71
Jim, the Wonder Dog, 112–113
jumper spiders, 99
juncos, 100–101

L

lacrosse, 183
La Niña, 25
leeches, 46
Lemieux, Mario, 138
lightning, 38–39, 40–41
  avoiding, 41
liver, 152
Love, Davis, III, 138

M

manners, 168–169
manure, 49
Mars, 20–21, 22
measurements, 176–177
memory, human, 158
meteor showers, 19
methane gas, 49
metric conversions, 177
Montreal Royals, 135–137
Moon, 10–11, 12–13, 19
moon dogs, 10
moose, 108
mosquito bites, 155
mouth, human, 142

N

Naismith, James, 130–131
Native Americans
  doughnuts, 165
  gardening, 72
  Moon names, 12–13
  Powell, John Wesley, 88, 89, 90
  pumpkins, 69
  state names and provinces, 178-181
Niagara Falls, 82–83
northern lights, 14–15
North Star, 16
nose, human, 142

O

oatmeal, 155
Old Bet, 78–79
Old Farmer's Almanac, The, 6–7
Old Rip, 114–115
onions, 155
orienteering, 16–17

P

pet food, 128
pet shows, 118–121
pigeons, 116–117
pigs, 54–57, 60, 111
  heroism, 111
Pilgrims, 69, 165
planets, 20, 22
pollution, 30
potatoes, 70–71, 74, 154
Powell, John Wesley, 88–90
provinces, Canadian, origin of names, 181
pumpkins, 68–69
Purina Animal Hall of Fame, 111

R

rain, 29, 30, 31, 45, 86
redworms, 66–67
Richter Scale, 174
Rickey, Branch, 134–136
robins, 101
Robinson, Jackie, 134–137
rodents, 120
rugby, 183

S

Saffir-Simpson Scale, 27
segregation, 134–137
Siamese twins, 80–81
skiing, cross-country, 183
skin, human, 143
skunks, 108
sleep
  animal, 104–105
  human, 144–145
soccer, 183, 185
softball, 183
sparrows, 101
spiders, 99
spinach, 152
splinters, 154
sports halls of fame, 184–185
Stanley Cup, 132–133
Stanley, Frederick Arthur, Lord, 132
states, American, origin of names, 178–180
Sullivan, Roy C., 40–41
superstitions, 160–163
swimming, 183, 185

T

Taylor, Annie Edson, 82–83
teeth, human, 146–147
tennis, 183, 185
  table tennis, 183
territories, Canadian, origin of names, 181
Thomas, Robert Bailey, 6–7
thrushes, 101
thunderstorms, 29, 32–33, 38–39
toad, horned, 114–115
tongue twisters, 166–167
toothbrushes, 147
Tooth Fairy, 147
track and field, 185

U, V, W

ultraviolet radiation (UV Index), 175
Van Arsdale, Sam, 112–113
vegetable gardens, 72–73, 75
Venus flytrap, 62–63
vermiculture, 66–67, 94
vitamins, 150
volleyball, 183, 185
walking, 156, 157
Washington, George, 31
weather
  forecasting, 29, 46
  patterns, 24–25, 28–29, 38–39
  proverbs, 42–46
  temperatures, 34–37
Weston, Edward Payson, 156
wind, 24, 26, 27
windchill factor, 37
wolves, 108
worms, 66–67, 94–95

Y, Z

yawning, 149
Yukon Territory, 34
zodiac, Chinese, 170

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